THE MEDICAL JOURNAL OF AUSTRALIA

VOL. II.—44TH YEAR SYDNEY, SATURDAY, SEPTEMBER 28, 1957 No. 13

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A COURSE IN SOCIAL PÆDIATRICS TO MEDICAL UNDERGRADUATES.

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MILTON SENN, who succeeded Gesell as professor of pædiatrics at Yale University, recently (1956) made the following statement:

> The care of sick children is still important in pediatrics, but sick children alone are no longer the main concern of pediatric education. Our interests are now equally with children who are healthy and with parents who want guidance in their rearing and education. Pediatricians are concerned with finding out more about growth and development of healthy children without forgetting about the deviants of growth. We wish to understand the relationship between physical, emotional and social wellbeing and we are trying to learn how to view a child—not as an isolated organism, but as a human being.

Shortly after the formation of the Institute of Child Health in Sydney in 1950, a division of social pædiatrics was formed with the following functions: (*a*) The study of the characteristics of the growth and of the physical, emotional and social development of children; (*b*) the study of the needs of children at various ages to ensure optimal growth and optimal physical, emotional and social development; (*c*) the study of the ways in which the total environment can be modified so that the needs of the child may be met; (*d*) the development of teaching methods to help medical undergraduates and graduates understand these aspects of child health.

This paper describes the programme developed by the Institute to teach social pædiatrics to fifth-year medical students during their term at the Royal Alexandra Hospital for Children, Sydney.

THE COURSE.

The programmes operating overseas require considerable manipulation of the curricula and the teaching facilities within the hospitals. At the University of Sydney, the teaching of clinical pædiatrics is a function of the Royal Alexandra Hospital for Children, and is controlled by a Board of Medical Studies. Incidental teaching in social pædiatrics does occur in both the in-patient and out-patient departments of the hospital, but it lacks one feature which the writer considers essential for satisfactory teaching—namely, the opportunity for the student to visit the mother in her home and discuss the various facets of the child's life, growth, development and health with her.

The use of healthy, apparently normal children within the community to teach growth and development offers students opportunities to observe child-to-child relationships and child-adult relations in everyday settings when children are behaving in a normal way. This course has been based on children attending kindergartens, of which there are about 10 within relatively easy access of the Royal Alexandra Hospital for Children; the majority of these have been used for this course at some time during the last five years.

All kindergartens have facilities for both indoor and outdoor play, and most arrange for the children to spend a part of each morning in free, undirected activity; the remainder is devoted

to group activities, such as singing, rhythmic dancing, story-telling, *etc.* A midday meal is provided at most kindergartens. Thus medical students have opportunities to see children in a wide variety of situations.

Details of the Course.

For the purposes of tutorial teaching, ward rounds and attendance at out-patient clinics, the students attending the Royal Alexandra Hospital for Children for pædiatric instruction are divided into six groups, each containing five to seven members. Each of these groups is taken separately for the course in social pædiatrics, which occupies four mornings at weekly intervals. The sessions begin between 10 and 10.30 a.m., and all except the first extend throughout the morning.

The first session is listed on the time-table as requiring a compulsory attendance; the remainder are listed as voluntary. The distinction is made because the first session is a lecturette-discussion at the hospital, and the second, third and fourth sessions constitute a unit during which the students are required to make a home visit (the first in their medical course as a medical person). It is considered that students should have the opportunity of making a decision about a home visit.

The First Session

The first session usually consists of four parts, as follows.

1. The supervisor asks each student for some personal details—*e.g.*, whether he is married, and if so, whether he has any children, and what their ages are; his war service; his sport record; any other interests. The purpose of this inquiry is to note any student who may be able to make special contributions to the discussions (held in the last session), and to endeavour to locate any student who may become disturbed during the discussions because the subject matter will touch upon his own personal problems.

2. The supervisor then discusses in broad general terms the significance of the home environment, both physical and emotional, upon the growth and development of children, giving examples of physical disease—*e.g.*, asthma, ileo-colitis—which are often aggravated or even initiated by disturbances in the child's relationships with parents or other adults. Examples are also given of minor departures from normal health, and of behaviour disorders which stem from the same source. It is pointed out that the study of family relationships is generally difficult with in-patients, and as a rule not much better with out-patients, and that much information about children can be gained by watching children at play, and by judging their reactions to adults, particularly strangers. The purpose of this talk is twofold: to point out ways in which the general practitioner can modify the child's environment to ensure more satisfactory growth and development, and to arouse the interest of the student in the second phase of the course.

3. The programme for the next three sessions is then outlined. For completeness this will be mentioned briefly here, to be expanded later. At the second session the group visits a kindergarten, and each student is allocated a child. Usually not more than five children are assigned, because more prolong the last session unduly. The student observes his child at play and talks to him, and later watches him prepare for and have his lunch. During the first session the students are given notes setting out the characteristics of children of this age, a schedule which lists most of the physical activities of children and the types of reactions to a range of social and emotional experiences and some advice on interviewing parents. For the third session the students return to the kindergarten, medically examine the child and then make a home visit, for which an appointment has been made by the director of the kindergarten or by the Institute social worker. Between the third and fourth sessions each student writes a medico-social report on the child and family, which he will present for discussion at the fourth session.

4. The home visit is discussed in some detail, since it is considered that this is the most critical event in this course. As was mentioned earlier, this is the first occasion on which the student has made a home visit in connexion with his training, and if he is to gain the maximum experience from it, he needs some guidance on how to conduct the interview. The purpose of the home visit is to collect information which will help him form an opinion about the quality of home care, both physical and emotional, including the quality of the mother-child relationship. There are a number of areas in which the students may normally ask questions without arousing any resentment in the mother, and without causing the average mother to withdraw from the interview. Questions can be asked about the history of feeding, attempts at toilet training, the sleep pattern and any disorders of sleep, playmates of the child, how he gets along with playmates, his relationship with his father, what the family does at the week-end. It is emphasized that the task of the student is both to collect facts about these aspects of family life and also to try to discover how the mother has felt about any particularly significant event. For example, it is not enough to ascertain that the child rejected for several weeks all attempts to give him solid foods; it is more important to know how the mother felt about this, and what, in general, were her reactions. This briefing session is based partly upon the appropriate chapter in "Health Supervision of Young Children" (Committee on Child Health, American Public Health Association, 1955), and on Garrett (1942).

Finally, after discussion of questions raised by the students, a rendez-vous is made for the next session the following week at the kindergarten selected for the particular group.

The Second Session.

The selection of children is made by the director of the kindergarten according to a general plan which the Institute has developed. A critical factor is that the mother will be willing to receive a student into her home the following week to discuss the child. The explanation usually given to the mother by the director is that these are senior medical students shortly to graduate, and their teachers at the University are anxious for them to have the opportunity of discussing with mothers in their homes the problems and difficulties that they have encountered with their children. Few of the mothers approached decline, and when this happens it is usually because of illness in the family. The great majority of mothers enter into this experience with enthusiasm. In each group of five children the director aims to have two normal, well-adjusted children, one or two disturbed children exhibiting behaviour disorders—*e.g.*, temper tantrums, undue aggression or withdrawal—and one or two children with a handicap or chronic illness. This ratio is not always possible; but there are always some normal and some disturbed children in each group.

When the students arrive, the children are engaged in free play, which affords each student an opportunity to see his child in a number of activities and relationships with other children and staff members. At first the students observe from a distance; later they talk to the child, trying to ascertain his interests, range of language and reaction to strangers. The students frequently ask the children to model things with plasticine or clay, to draw, to finger-paint or to attempt to solve the puzzle boards.

The pædiatrician supervisor is in attendance for an hour or so on this occasion, moving from student to student, drawing attention to interesting pieces of behaviour in the child being observed or in other children. The supervisor also discusses any aspect of the child's behaviour about which the student is uncertain. The students are also at liberty to talk to the teacher; from her they learn about the adjustment of the child to the kindergarten when he was enrolled, changes that have occurred with time, and the current attitudes of the child to the kindergarten and the other children. At the kindergartens used in this course the children are given a midday meal, and the students can watch the children washing in preparation for this, and then eating. The attitude to food, eating behaviour and the existence of fads can be noted.

The attitudes of the students to this part of the course vary greatly. Some students are obviously bored by the experience and find the antics of young children trying. The majority, however, participate with enthusiasm, and it is not unusual to find a couple of students organizing a ball game with the object of including the children whom they are observing. In general, married students with children of their own, those with young children at home, and those who take an active interest in church, Boy Scout or Girl Guide work enter more wholeheartedly than the others into these observations.

The Third Session

On arrival at the kindergarten on the second occasion, the student makes contact with his child again, and then asks him to come to the medical examination room. Some students have difficulty in doing this, and obtain the assistance of the staff; but most students are able to get the children to the room unaided, and to undress and examine them.

The student than makes the home visit. Some mothers wait at the kindergarten after they bring their children and escort the student back home; other students are taken to the home by one of the kindergarten staff, introduced to the mother and left. At some kindergartens the students find their own way to the homes. Not infrequently the students are given morning tea. The success achieved by the student during the home visit is revealed in his report.

The Fourth Session.

In the week following the third session, each student prepares a medico-social report on the child and the family. This is then presented by the student to the group at the fourth session, which is held either at the kindergarten or at the University.

The kindergarten director usually attends the discussions, and if the Institute's social worker has made home visits to collect information about the family, she also attends. An attempt is made to have at least one child in each group tested by a psychologist. If possible, this test is made when the students are at the kindergarten, so that they can see some of the testing. If a test is made, the psychologist also attends the discussions.

The pædiatrician in charge of the group acts as leader in the discussions. After each student has presented his report, the rest of the students are invited to ask questions and then to discuss any aspect of the report. By redirecting questions, the pædiatrician endeavours to keep the discussion within the student body. Occasionally he supplies some technical facts about child development to enable a point of discussion to be settled. Whenever an abnormality of growth or development is revealed, the student is asked to indicate the line of action he would follow if the mother and child were his patients and he was the general practitioner.

The Principles Guiding the Teaching Programme.

The policy is to permit free discussion of topics as they arise, within a broad framework which has been drawn up to guide the pædiatricians who act as supervisors. By the use of the judiciously placed question, it is possible for the supervisor to guide discussions so that during the session a certain number of nine areas are considered. (The chance does not often occur that the children selected and the medico-social reports lead to the discussion of all these topics by each group of students.) The areas are as follows: (i) characteristics of normal growth, with the range of deviants within normal; (ii) interpretation of nutritional status, feeding patterns at different ages, what constitutes a feeding problem and how these may be handled by the doctor; (iii) characteristics of physical, social and emotional developments at each age up to six years; (iv) the significance of the mother-child relationship, how it is developed, how it can be affected by factors within the child, the mother and the household environment, how the doctor can foster a good relationship or help correct an unsatisfactory one; (v) the quality of family ties, and especially the relationship of the children to the father; the importance of the father figure; (vi) bowel and bladder training, and the possible significance of the use of rigid and relaxed schedules; (vii) items of normal behaviour which are sometimes a concern to parents, and which in some children do reach the abnormal—*e.g.*, manipulation of the genitals, aggression; (viii) behaviour disorders considered in respect of both ætiology and treatment; (ix) facilities in the community which the doctor can use—*e.g.*, Marriage Guidance Councils, the Family Welfare Bureaux, the field services of the Child Welfare Department, the agencies to which the handicapped child can be referred.

The Participation of Members of Other Disciplines in the Discussions.

The inclusion of the kindergarten director, of a social worker and of a psychologist in the case discussions serves a double purpose. All these workers bring to the discussions their own observations and interpretations, thereby enriching the discussions. Perhaps it is of greater significance that the medical students are made aware of the roles that each of these workers plays in the community in the care and guidance of children, and of the ways in which the doctor can use them to assist him in his management of children.

Discussion.

In this brief course it is hoped that the students may acquire a certain body of knowledge about child growth and development, and learn how to use this knowledge in their future practices, and also that they may appreciate the nature of community services on which the doctor can call for assistance in the care and management of various types of children, and accept the significance of the social and emotional factors in the lives of children in the maintenance of health and the ætiology of disease. The quality of the reports by students varies widely; some are particularly good, the majority are sound appraisals of the situation, a few are poor, showing little application and insight.

The acquisition of facts is intellectual learning and presents no difficulties to the average student. The acceptance of the significance of socio-emotional factors frequently requires the development, reorientation or even changing of beliefs and attitudes about the origins of disease, and contains an element of affective learning. Some aspects of affective learning can be achieved only at the subconscious level—as, for example, the learning by children to conform to the patterns of behaviour and the beliefs of the family. Attempts to change these attitudes and beliefs often evoke a considerable emotional response. Numerous writers (Halliday, 1949; Cameron, 1954; Steele, 1949) have deplored the emphasis given in the medical course to mechanistic and bacteriological factors in the ætiology of disease, often to the exclusion of psychological factors. Attitudes about the origins of diseases, although firmly held by some students, are not fixed in many, and are capable of modification, probably without undue emotional reaction within the student, particularly if the reorientation is attempted through the presentation of easily acceptable facts. Recently an attempt has been made during the discussion to induce the students to discuss their feelings about the significance of social and emotional factors and the contributions made by these group discussions to their knowledge of disease processes. Earlier it had been assumed that the experiences gained during the course would be enough to start a chain of thinking in the students in the desired direction. Periodic evaluation by the students has cast doubts on the validity of this belief, and now it is hoped that the opportunity to analyse their own feelings will help in the more rapid development of wider attitudes.

An important feature of this course is the case discussions in the fourth session. In these an attempt is made to use the group discussion method, now being widely applied in all manner of learning situations throughout the world. The grouping of students for pædiatric tuition is generally the same as for clinical teaching in the general and obstetric hospitals, and many groups of students have been together throughout their medical course. This arrangement ensures one of the prerequisites of a satisfactory discussion group—namely, an existing functioning group with well established lines of communication between the members. In a well-conducted group discussion, the chairman or leader (in these groups the pædiatric supervisor) plays a minor role, being content to initiate discussion, if necessary to intervene to keep discussion to original lines, and to bring in other issues as soon as the main discussion comes to an end. Once discussion has started, it usually keeps travelling from student to student, until everybody has become involved. When questions are directed to the group by the chairman, an effort is made to keep these to events of everyday life, and not to raise issues concerned with scientific concepts of child development. Most students feel comfortable discussing everyday life, whereas they hesitate to enter a controversy about the purely scientific aspects of the problem.

The significance of the group discussions lies in the fact that discussions are taking place in small groups. The students are thus subjected to the forces which operate within small homogeneous groups. Since much of the student's learning in his medical course has already taken place in the same group, it is inevitable that the group will exert an influence upon the thinking of its members. It has been our experience that once a group as a whole begins to sense the purpose of the discussions and shows acceptance of some of the principles developed in the discussions, individual members are usually influenced in the same direction. Kurt Lewin, who made many experimental studies with small groups, showed that a decision made within a group as a result of group thinking was from two to ten times more effective than a lecture in producing actual change. Haiman (1954) has pointed out that, contrary to developing conformity, which would be undesirable, group discussion methods "encourage the individual members to think and to think by its very nature is to think for oneself".

It should not be assumed that every group of students over the past five years which has participated in this course was

rated a satisfactory group. During the first year or so the preparation of the students for the sessions at the kindergarten and the home visit was inadequate. Changes have been introduced from time to time, usually as a result of student evaluations, and now the students receive much more preparation for both these phases. Some groups are undoubtedly better than others in respect of both their application to the field work and the quality of the discussions. In part these differences stem from the overall quality of the work of individual students in the groups, and partly from the children studied. Proximity of examinations in other subjects certainly influences some students more than others.

One encouraging feature is the high percentage of students who participate in the three voluntary sessions. During the first two years seldom more than 60% of the students attended. Since then the numbers have progressively increased, and now rarely does a student fail to arrive at the kindergarten.

Since a large proportion of the discussions in the final session are concerned with human relationships, it is to be expected that some students will become disturbed by the ideas developed by the group. There is always the possibility that events in a student's childhood will parallel the events in the life of the child being considered. A married student with children may see some similarities between his own family and the family being discussed. One woman student threw her report on the table half-way through, and said she could not go on as she was discussing her own child. Anxieties, which can frequently be detected by the paediatrician, often develop in these students. The anxiety takes two forms: withdrawal from participation in the discussion, or a violent attack upon the ideas. If it is suspected that a student is unduly disturbed, it has been our practice to single him out at the end of the session and ask, in private, whether there is "anything" in the discussions that is particularly bothering him. Most students take advantage of this gambit, and it is usually possible to allay some of their anxiety or help them with their problem. It is an interesting observation that more students were noticeably affected in the first year or two of this course than in the last year or so. One conclusion could be that with time the supervisors have become more skilled in the guidance of the discussions.

Reference has already been made to the evaluation of the course made by groups of students from time to time. Regular routine evaluations have not been made; but each student in several groups each year is asked to complete an evaluation form and return it to the Institute without a signature. The analysis of these forms has been used to develop the course to its present form, which we would like to think is still in the formative stages.

Summary.

A course of social paediatrics given to medical undergraduates in their fifth year is described.

Acknowledgements.

When this course was initially planned, and from time to time since, the writer had opportunities to discuss various phases with Professor L. Dods, to whom his grateful thanks are given for encouragement and advice. In the beginning the writer acted as supervisor to all groups; in addition to constituting a heavy teaching burden, this had other obvious disadvantages. Over the years, a corps of younger specialists has joined in the conduct of these sessions. The writer wishes to thank Dr. W. Cary, Dr. D. Kerr Grant, Dr. Clair Isbister, Dr. J. Kerridge, and Dr. G. Scott for their help in developing this programme.

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PSYCHOTHERAPY IN GENERAL PRACTICE.[1]

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THE purpose of this paper is to describe some aspects of an attempt to practise psychotherapy in general practice. It is a practical and a personal description, for which I crave your indulgence, as I feel that it cannot usefully be otherwise.

These remarks are based on observations and experiences during the past two years, during which the psychosomatic diseases, as well as the neuroses, have been an absorbing study. During previous years, an interest in nervous disorders had been stimulated by the necessity, created by my relative isolation in a country practice, of doing something for them. After much trial and error, I found an approach to neuroses which produced satisfactory results, and which was compatible with the conditions of general practice. This approach has since been extended, at first to patients who had a long history of chronic or recurrent bodily illnesses. Later, whenever time and circumstances permitted, I encouraged emotional expression in all patients, irrespective of their illness. This has brought a bewildering array of observations and results, difficult to correlate into any pattern or order; but it has become abundantly clear that psychic factors are far more important in bodily disease than I had previously imagined.

Method of Diagnosis and Therapy.

A complete description of my approach is beyond the scope of this paper; it has previously been given (Jansen, 1954). It is based on Roger's non-directive therapy. After the usual history and examination the patient is encouraged to express his emotional reaction and relation to his symptoms. At this stage, mental conditions seem ripe and ready for ventilation, and a maximum of diagnostic and therapeutic data may be secured in a minimum of time, so long as there is an attitude of sympathetic interest and understanding. If emotional expression occurs earlier, it is encouraged, and, if necessary, examination may be postponed till the next consultation. By the encouragement of free expression, and by the clinician's listening in a manner different from ordinary history-taking, diagnosis merges imperceptibly into treatment. Responses are designed to clarify the emotional content of what the patient says. Reassurance, advice and suggestion are avoided, except in promoting *rapport* and ventilation. Explanation of the mechanism of causation of neurotic symptoms may be given in early interviews, but interpretation is kept to a minimum.

To make a start when there is a somatic symptom or disorder is often difficult. Occasionally the patient will spontaneously, but hesitantly, associate his symptoms with some difficulty or personality trait. More often, there is little or no conscious emotional stress, or it may be against his principles to display or reveal his feelings, or to seek and accept help. Inquiry into his feelings about coming to the doctor, with sympathetic acceptance and clarification of these, will commonly provide a convenient starting point, and also increase his awareness of a contributory character trait. In other cases, there may be several consultations, during which orthodox medical treatment is performed and the patient is encouraged to talk about himself before any *rapport* is established or any ventilation occurs.

Once communication of difficulties or feelings has begun, progress (or the lack of it) depends largely on the doctor's responses. These have a meaning and significance to the patient beyond, and perhaps more important than, their verbal content. Their emotional and symbolic meaning and their dependence on the doctor's mood, attitude and behaviour have been aptly described by Meares and others.

[1] Read at a meeting of the Section of Neurology and Psychiatry, Australasian Medical Congress (British Medical Association), Sydney, August, 1955.

Their importance is supported by an experience with a depressed New Australian, who had had shock therapy on two occasions. I tried to obtain her history through her son, who possibly conveyed her words; but there was a big discrepancy between her manner and expression and his interpretation of her story. Better results were obtained by struggling, during several interviews, with an extremely limited vocabulary, aided by full use of expression, gesture and pantomime; but perhaps the humour of the last-mentioned forbade the continuance of her depression.

This method of approach has not changed appreciably during recent years, but practice and experience have produced greater skill in encouraging and clarifying emotional expression. By becoming aware of some of my automatic behaviour patterns, I have developed a greater freedom, ease and variety of response. The method is sufficiently flexible to permit the use of reassurance, suggestion or environmental treatment when necessary—as, for example, in the elderly. Other medical investigations or treatment may be performed concurrently. Not uncommonly, the patient desires a mixture simply to avoid awkward explanations to his family or friends.

Special Features of Psychotherapy in General Practice.

There is a unique advantage in seeing the patients at an early stage. Watts and Chapman have emphasized this. The patients in these cases do not conform to those described by psychiatrists, who would see them only at a later stage. They do not need, and indeed would certainly refuse, prolonged and expert psychiatric care; but they do need more help than is given by reassurance, advice and the complacent prescribing of placebos. They respond beautifully to simple psychotherapy.

The general practitioner sees these patients at a most opportune time, when their emotions are ripe for release. At the first interview, emotional tension is often increased by the consultation itself, and feelings are communicated readily, so long as the right atmosphere is provided. Subsequently, the patient commonly comes to the doctor after some experience has reactivated his tension or conflicts. The general practitioner has some of the advantages of group therapy in this regard. He sees the patient when old behaviour patterns or intellectual defences have already been shaken or broken or proved ineffective. Any progress made in the reorganization of adaptive patterns or the development of new ones can be tested in his usual environment. Progress occurs between, as well as during, interviews. I have on this account allowed and encouraged patients to time and space their own consultations.

The duration of the interviews is dictated to a large degree by the number of patients waiting. Ideally, the first and second interviews could be longer, but once the patient has become accustomed to communicating his feelings, it matters little. A full waiting room often gives him the courage to come to the point quickly, or he will spontaneously allow others to precede him. Whitby succeeds in recognizing and handling personality problems with an overall average of four minutes per patient in the surgery.

Therapy must be non-directive and with a minimum of advice or suggestion. This has become even more necessary as psychic factors in disease have been sought and found on a more general basis. When Mrs. A. comes in with a symptom apparently precipitated by helpless indignation towards Mrs. B., it may be tempting to offer sympathy, advice or interpretation of one or both personalities. But this can be embarrassing or damaging when Mrs. B. comes in later with some illness, also precipitated or aggravated by the stress of their strife. I once treated simultaneously, for various bodily and nervous symptoms, a man in doubt, and the two young women in love with him. Such experiences are splendid opportunities to learn about interpersonal relationships and their results. They also teach one that, although it may be more difficult and take a little longer, better and more lasting results may be obtained by seeking the underlying conflicts or needs than by concentrating only on the immediate medical or personal problem.

It is important that notes should give not only the symptoms and signs, but also their manner of presentation. The significance of this has been well described in an article by Sinclair. Many patients present frequently with apparently unrelated minor illnesses, each of little consequence and easily cured. A long-term review, with the observation of similarities in their presentation or symptoms, will reveal their personality type and the way in which they react with an illness to minor physical or psychological stresses.

Progress of Patients.

Several patterns in the progress of patients undergoing psychotherapy forcibly attracted my attention and altered my outlook.

Encouraging and clarifying emotional expression of itself often produces dramatic changes.

This is illustrated by a patient who presented with a large oval, indolent ulcer (measuring two by three inches) on his shin. It had been slowly growing larger over two years, and lay in the scar of an operation for osteomyelitis, contracted 20 years before. It seemed a straightforward medical problem; but the patient had evaded medical attention for two years, and there had been a note of urgency in his voice when he had sought an appointment. After a little encouragement, many feelings, experienced at the time of the original attack of osteomyelitis and subsequently, were ventilated. His disability had already deprived him of the opportunity of fulfilling early ambitions and ideals, and he now dreaded that he would again be confined to bed or hospital. No treatment was given; but three days later, when I reexamined his leg and examined it radiologically, the ulcer was much smaller, with healthy healing edges.

Why had this patient's ulcer suddenly started to heal? The only feature common to this and other similar cases was that the bodily change had followed emotional communication and release. I could not explain the intervening psychic and bodily mechanisms. This was intriguing and irritating; but it was equally disturbing to realize and accept the fact that a medical diagnosis had little or no value in deciding whether psychotherapy would help the patient.

Another feature in the progress of patients was even more disturbing. This was noted mainly in those who had a long history of bodily or nervous disease. Some would progress smoothly and steadily towards recovery; a few would be uninfluenced, or would cease therapy; but a number would undergo many psychic and bodily changes during their therapy. They would perhaps be depressed and despondent one week, anxious the next, or irritated (and irritating) at another interview. Their bodily symptoms and signs would change, too. They might develop attacks of asthma, cholecystitis or eczema after having been free of these for years. One woman, who had had fibroid tumours removed by a subtotal hysterectomy many years before, not only experienced a recurrence of her pains, but also bled from her cervical stump. Often, as the bodily disorder was relieved, it would be replaced by a neurotic illness, which was even harder to endure than the physical suffering. This symptom substitution was sometimes dramatic and reminiscent of that induced by Seitz using hypnosis. It was disturbing and frightening at first, as I did not know whether it would lead to recovery or not. Mostly it did, and I became accustomed to it. It taught me to respect the power and dangers of psychotherapy. I would give much to be able to explain this symptom substitution. Such knowledge would be of great value; but it is not essential in treating the patient and helping him to achieve bodily relief and emotional integration or maturation.

Another less disturbing feature has been the irregularity of progress. Commonly, the patient will come regularly for several weeks, during which period his symptoms disappear, he appears to achieve some insight, and new impulses and actions emerge. He may return, many months later, with a mild exacerbation of symptoms or a new bodily or nervous disorder. At first I was dis-

appointed and regarded these cases as failures. However, it was comforting to observe the same feature in other recorded case histories—*e.g.*, those of Robinson. It seems that these patients, having achieved symptomatic relief, are temporarily satisfied and content. They have gained some freedom to utilize a repressed or undeveloped potentiality, but need time and practice to develop it and coordinate it with their other potentialities. It is akin to Riesen's experiments in animals reared in darkness (Beach, 1953). On their exposure to light, many days, corresponding to months in a human lifetime, were required to develop visual recognition and response. The new potentiality or sensation may be a burden at first, and create adaptive difficulties of its own. This development may occur smoothly and without help, or it may be difficult and with occasional setbacks in an unfavourable environment. Further experience has not altered the principle of allowing the patient to space the interviews, according to his own needs, at this stage, so long as he is made to feel free to return, if necessary.

The Results.

It is difficult to make an accurate and unbiased assessment of results. For a while I tried making predictions on my case notes, but these were often wrong. The natural course of neuroses and psychosomatic diseases is usually full of exacerbations and remissions, and as has been stated, the progress during psychotherapy may be similarly so. To add to this difficulty, non-directive therapy is often combined with symptomatic or specific medical treatment. The psychosomatic diseases do offer a more certain index of cure by their bodily signs; but a bodily change does not always mean that the underlying symptom-complex or personality trait has been cured.

Despite these difficulties, there can be no doubt that psychotherapy has been of immense benefit to the patients. As well as curing the symptom—and it is readily admitted that this can often be done more quickly or easily by other means—it does help him to develop better responses to similar stimulation.

Most of the patients have early or acute symptoms. Psychiatrists probably seldom see them at this stage. One of several interviews at opportune times may initiate personality changes, which continue for weeks or months, if the environment is favourable. It is in these cases that this work would seem to have its greatest value, as it is preventive as well as curative. It prevents the patient from developing a fixed neurotic response. It promotes mental as well as physical health.

Psychotherapy has enabled me to cure many chronic disorders that had persisted despite many other methods of treatment. These may require from six to forty interviews irregularly spaced over months or years. These patients need time as well as psychotherapy to change damaging automatic behaviour patterns.

Most of the failures have been due to mistakes or clumsy explanations in commencing therapy in psychosomatic disorders. I unwittingly offended some patients by too much interpretation, by too critical an attitude, or by trying to associate symptoms and character traits before the patient was ready and able to accept this. There are a few others with whom I can make little progress, probably because they irritate me, or because their basic problems painfully resemble unsolved personality conflicts of my own.

There are other patients whom it appears unwise to treat by the methods outlined—*e.g.*, the elderly and hypertensives—since a possible temporary aggravation of their diseases would be dangerous to them.

Other Results.

The results of psychotherapy extend beyond the patients. It has been remarkable to observe how the physical health of the whole family will often improve after the patient is cured. It is bad for business, as frequent visits by several members of the family, extending over years, suddenly cease. This happened often enough to be noteworthy. It indirectly supports the conclusions of Downes and Symon, who, in a city-wide survey, found that not only psychoneurotics, but also their families, were outstanding because of their illness experience. It also suggests that the effect on the family health, as well as on the neurosis itself, is reversible.

Another result affecting the business aspect of practice is that the annual incidence of appendicectomies and tonsillectomies has dropped from twelve to two. Many interpretations could be offered for this. It does seem, however, that these organs are more susceptible to infection when the patient is under adaptive stress.

Another result, worthy of comment, was a temporary adverse reaction by the community generally. This is perhaps inevitable while one is developing skill in a different method of approach. A few patients were offended by misinterpretation of my early clumsy attempts to explain my methods, and there was a temporary minor emigration to neighbouring practitioners; but most of these patients soon returned. There was, however, a more lasting resistance by friends and relatives, who could not believe that man's humanity to man could cure. They would also see some patients become temporarily worse, or progress into a phase irritating to them. A meek and mild neighbour or spouse, too afraid or ashamed to stand up for himself, may, when freed of his repression, overcompensate and appear proud and aggressive. Inevitably his first attempts at assertion would be clumsy and possibly irritating. His friends would not appreciate the results of psychotherapy at this stage. The publication of a résumé of my article in the daily Press did not help. Its headline was: "10% of Patients Have Neuroses". This rapidly rose in local gossip to 50%, and finally there were comments like: "What does he think we are, nitwits?"

The fact that this stage of resistance passed and that more patients presented themselves asking for relief from emotional difficulties as well as symptoms, speaks well for the value of psychotherapy in general practice.

The results include changes in the doctor himself.

Some of my difficulties and feelings have already been mentioned. Although this trangresses the rules of scientific papers, I believe that it is necessary, as psychotherapy involves one's own personality rather deeply. It was not easy to accept Hadfield's statement that the patient is cured by the faith and love of his physician, or Rosen's assertion that counter-transference is more important than transference. It took time to acquire faith in the possibility of harmonization of one's innate potentialities. It was intensely difficult to relinquish the old habits of reassurance, advice and prestige suggestion and to substitute empathy for sympathy, even when I had learnt that non-directive therapy gave better and more lasting results.

Throughout there has been a process of self-analysis. I have gained insight and understanding and matured emotionally together with my patients. But self-analysis has its limitations, and I would not recommend it when colleagues with similar interests are available. In Hadfield's words: "We cannot pursue an analysis and at the same time maintain a balanced judgment with a mind, the reliability of whose standards of judgment is being called into question." I would like to acknowledge the great help I have received from correspondence and discussions with Chapman, Robinson and Sinclair.

My own experiences, in conjunction with Balint's writings on "Training General Practitioners in Psychotherapy", have convinced me that the biggest difficulty facing a doctor endeavouring to practise psychotherapy is himself. But even he can be improved if he will but submit to treatment.

Hypnosis.

I would like to submit a few impressions on hypnosis. I began using this, very hesitantly and shamefacedly, on a few selected and willing obstetrical patients, as it appeared to be the ideal method of achieving analgesia, having none of the disadvantages of other methods. After

the correction of a few errors and omissions in the initial cases, it has been most satisfactory, and patients are beginning to ask for it. Its use has been extended a little in recent months. The main purpose of its mention here is that I have not encountered the opposition and prejudice against it that I expected. Again, the biggest initial difficulty was to counter my own fears and doubts in using a method which a few had proven to be of great value, but which was regarded, within the medical profession, as unorthodox.

Conclusions.

There is an immense scope for psychotherapy not only in the neuroses and psychoses, but also in somatic disease in conjunction with other medical treatment. Our omissions and failings in the treatment of nervous and mental disorders are perhaps the most shameful problem facing the medical profession. Much can be done in prevention and treatment by the general practitioner. He alone sees the mild cases and the early stages of mental illness, but it requires a fairly radical change in his approach to patients. It is not easy to give up one's old habits of reassurance and advice; nor is it easy to learn to communicate with the patient on an emotional, as distinct from an intellectual, level; but the results more than justify this effort. As Watts has shown, the change from a complacent prescribing of placebos to a simple but radical psychotherapy is amply rewarding.

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HYPERPARATHYROIDISM SIMULATING PAGET'S DISEASE.

By W. BROWN LAW,

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SINCE von Recklinghausen reported his first case of hyperparathyroidism in 1891, and Mandl successfully removed a parathyroid tumour in 1926, many cases of this interesting condition have been recorded. Black, writing from the Mayo Clinic, was able to report on a series of 63 cases in 1948. The condition is such that it is unlikely to be encountered more than a few times in any surgical lifetime, and therefore its possible confusion with such a common condition as Paget's disease of bone must be kept in mind.

Before the histories are recorded of two examples of hyperparathyroidism, both of which were for a time regarded as Paget's disease, the salient features of hyperparathyroidism may be recalled. It is a condition which afflicts females twice as frequently as males, the average age being forty-eight years. Complaints vary from such common ills as pain in the limbs or back to the more dramatic episodes of fracture or deformity in a long bone. Dysfunction of the urinary system due to renal calculi is commonly encountered. Radiographic examination reveals the outstanding feature of generalized osteoporosis with absence of the normal contrasting densities of cortex and medulla. Cystic areas may occur in any bone, but are most commonly found in the major limb bones and the pelvic girdle. The hands are not uncommonly involved. Because of endosteal cysts, the shaft of a bone may be more slender than normal and may possess the thinnest possible cortex.

The blood calcium level is elevated and the serum phosphorus content is diminished. With the raised blood level of calcium there is commonly an increased urinary excretion of calcium. A less important observation is the elevation of the serum alkaline phosphatase.

A hyperfunctioning parathyroid adenoma is found in one of the glands. The tumour usually consists of "principal cells".

FIGURE I.

Case II: October, 1956. The marker indicates the cyst, and inferiorly is seen the pseudo-fracture.

Reports of Cases.

CASE I.—Mrs. X, aged forty-nine years, was admitted to hospital in Liverpool England, in March, 1956, with a fracture of the shaft of the right femur. For years she had been a wheel-chair invalid because of "Paget's disease". The femur was treated in a Thomas's splint, and all appeared to be well. Three months later, however, it was noted that very little callus had formed. Immobilization was continued, but union was extremely slow. In the following month her condition deteriorated and she died from renal failure. *Post mortem*, a tumour of the right inferior parathyroid gland was found in the superior mediastinum.

CASE II.—Mrs. Y, of Hobart, aged fifty-one years, the mother of two healthy children, had first consulted a medical practitioner five years earlier because of pain in her thigh. At that time the pain was not severe, but an X-ray examination of the limb was reported as showing early Paget's disease. One year later her medical adviser consulted another colleague. The diagnosis was reaffirmed and the patient was reassured. On two other occasions she had consulted medical practitioners within the last two years. She was radiologically examined on both occasions and was told that her Paget's disease was progressing.

I first examined her on October 11, 1956, at the request of her general practitioner. She had just been an in-patient in her local hospital for blood tests and treatment of anæmia. Her complaint was of increasingly severe pain and cramps in her right thigh, particularly in bed at night. An X-ray film

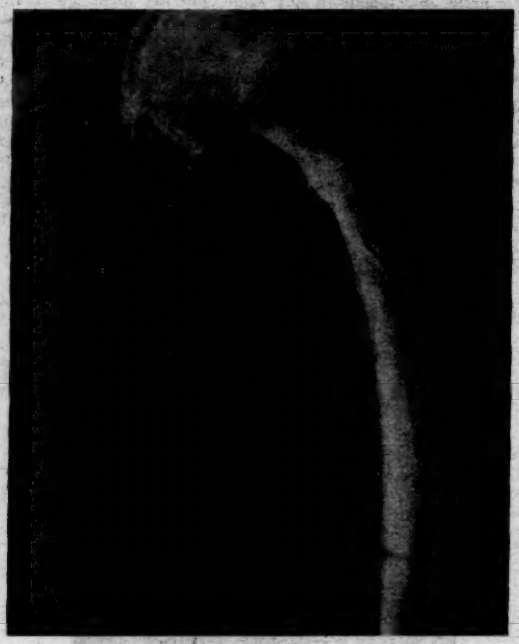

FIGURE II.

Case II: September, 1956. The photographic reproduction here is poor, and does not give a true indication of the cortical layer.

taken on that day revealed a large cyst in the upper third of the femur with a Looser's zone through the inner cortical wall of the shaft below the cyst (Figure I). There were diffuse cystic areas in the left femur, the left ilium and

FIGURE III.

February, 1957. In spite of the poor photograph, one can see that the large cyst is decreasing in size.

the hands. The skull films showed the diffuse fine mottling of hyperparathyroidism. Generalized osteoporosis of the bones was shown in films of the thoracic cage and vertebral column. There were no renal calculi.

The patient refused admission to hospital, for she "had had enough of blood tests". None of the blood tests performed in the village hospital was concerned with biochemistry. Early in December, 1956, because of increasing pain, she agreed on admission to hospital. The blood findings were checked, as shown in Table I, on two occasions before operation.

At operation on January 1, 1957, a tumour of the left inferior parathyroid gland was removed. It was the size of a cherry, soft and rubbery in consistency, and weighed three grammes. On microscopic examination it was seen to be an adenoma, consisting mainly of clear principal cells.

Apart from an unpleasant ten days after operation, when a blood transfusion was required, and post-operative tetany necessitated the use of calcium lactate, the patient progressed satisfactorily. She is now almost completely free of pain in her thigh, and is happily submitting to a diet of high protein and high calcium content.

Differential Diagnosis.

Paget's Disease of Bone.

Paget's disease of bone is found more frequently in males than in females, and is uncommon before the age of forty years. The younger the patient, the less likely is the illness to be Paget's disease. Though it may be widespread, *osteitis deformans* is never completely generalized.

Radiographic examination reveals a general thickening of bone, with diminution in size of the medullary cavity. The honeycombing of long bones in Paget's disease is combined with definite new bone formation on the surface, the new bone also being honeycombed. The skull is thickened and irregularly dense, whereas in hyperparathyroidism it is decalcified and mottled with minimal thickening. A grossly cystic appearance is uncommon in Paget's disease. The hand is rarely involved.

Examination of the blood reveals no feature characteristic of Paget's disease.

Multiple Myelomatosis.

Multiple myelomatosis is a fatal neoplastic disease of the hæmatopoietic system, afflicting males twice as often as females, and in the fifth and sixth decades. Fatigue, cachexia and pain in the back are often the earliest complaints.

Radiographic examination may reveal nothing more than generalized osteoporosis, so that the diagnosis is not always apparent. The classical endosteal clear, punched-out areas may be seen in the ribs, spine, skull and hands.

Metastases in lung practically rule out multiple myelomatosis. The clear, punched-out areas in the skull found in Hand-Schüller-Christian disease are more sharply defined and less numerous, but larger than those of myelomatosis.

Paraplegia due to collapse of vertebræ is not uncommon. Fracture may draw attention to a cyst hitherto unsuspected. Renal tubule blockage occurs because of casts.

Anæmia and amyloid disease commonly occur in myelomatosis.

Perplexing changes in blood chemistry may occur; the albumin-globulin ratio may be reversed, there may be an increase in the serum globulins, in the total plasma protein content, and also in the serum calcium content and the urine calcium excretion.

Recently, Beare and Knudsen have recorded the occasional difficulty in discriminating between myelomatosis and hyperparathyroidism. In their case the hypercalcæmia and hypophosphatæmia associated with a normal electrophoretic pattern favoured the parathyroids as the source of trouble. As the result of a bone biopsy, the correct diagnosis of myelomatosis was established. Flynn in 1954 stressed the importance of investigating the electrophoretic mobility of any protein excreted in the urine, should the results of serum assay be equivocal. Examination of the marrow would short-circuit these more exotic investigations.

Fibrous Dysplasia of Bone.

In 1931 Hunter and Turnbull referred to multiple "cystic" lesions in bones unassociated with changes in the blood chemistry, and in 1933 Elmslie indicated the unilateral distribution in many such cases. Albright, in 1937, focused attention on such cases by describing pigmentation and sexual precocity in a large number of them. In 1938 Lichtenstein coined the phrase "polyostotic fibrous dysplasia" for what in essence are multiple skeletal lesions, due to fibrosis, but without the general decalcification and disturbance of calcium metabolism associated with hyperparathyroidism.

Patients aged ten years or even less may be found to have fracture, deformity or asymmetry. Often bone pain in young adults draws attention to the condition. Areas of skin pigmentation are commonly found.

TABLE I.

Date.	Serum Calcium Content.[1]	Serum Phosphorus Content.[1]	Serum Alkaline Phosphatase.[2]	Total Serum Protein Content.[3]	Serum Electrophoresis.	Blood Urea Content.[1]	Hæmoglobin Value.[2]	24-Hour Urine Calcium Excretion.[1]
Before operation:								
21.12.56	12·0	2·5	19·5	7·0	Normal.	32	13	167
3. 1.57	14·2	2·7	20·0	7·0	Normal.	32	13	—
After operation:								
18.1.57	8·8	1·6	11·8	—	—	—	—	—
21.1.57	6·2	1·9	10·9	—	—	—	—	—

[1] Milligrammes per 100 millilitres.

[2] King-Armstrong units.

[3] Grammes *per centum*.

The bone lesions are predominantly unilateral, but if bilateral they are asymmetrical. The proximal segments of major long bones are chiefly involved. The hand is affected.

On radiographic examination the lesions are endosteal, and may be small cysts or a diffuse involvement of an entire shaft. The shaft may be enlarged and deformed. It is common for the upper half of the femur to be involved and for the remainder to exhibit a normal density.

Blood examination shows no characteristic abnormality.

Metastatic Deposits in Bone.

Secondary deposits in bone may cause difficulty in diagnosis, particularly when no primary tumour is found. The general osteoporosis may be associated at times with a raised serum calcium level, but this is uncommon.

Senile Osteoporosis.

Senile osteoporosis, which is commonly associated with backache and deformity, may produce radiographic evidence of a collapsed vertebra. Although there is generalized osteoporosis, there are no biochemical abnormalities. It is worth recalling that true *diabetes mellitus* is also a possible cause of generalized osteoporosis owing to the long-continued acidosis.

Discussion.

Picard's aphorism that the diagnosis of a rarity depends chiefly on keeping it in mind was illustrated by the two cases in this paper. In Case I hyperparathyroidism was not borne in mind, and was not, therefore, sought by routine laboratory tests. This unfortunate patient was examined over the years by numerous medical practitioners, including myself; but the correct diagnosis was missed. When, at three months, in supposedly "Paget's femur" no evidence of union was forthcoming, then the correct diagnosis should have been suspected.

Case II, coming soon after the Liverpool case, was soon established as a case of hyperparathyroidism. The very early X-ray films are unfortunately not available; but an X-ray picture taken in September, 1956 (Figure II), shows a large cystic area in the upper third of the femur. There is no feature in this film to suggest Paget's disease; the cortex is normal in appearance, the cyst is medullary and encroaching on the inner margins of the cortex. One would expect a thickening of the cortex with increased trabeculation in Paget's disease. Cysts, if they do occur, are not centrally placed and expanding in Paget's disease.

It is therefore suggested that blood examinations be made, whenever any feature appears odd or unusual in an example of Paget's disease, whether this is the excess pain or the relative youth of the patient. It is only by repeated estimations of the blood constituents (calcium, phosphorus and the protein moiety) that abnormalities may be detected.

The generalized osteoporosis of hyperparathyroidism commonly precedes by years the appearance of cysts. Thus in a young person the only radiographic evidence may be decalcification without cyst formation. Such a rare condition as the Fanconi syndrome, part of the renal osteodystrophy class, would be detected by examination of the urine.

Acknowledgement.

The exploration of the neck and removal of the parathyroid tumour were performed by Mr. J. B. G. Muir, F.R.C.S. I wish to acknowledge his help in the treatment of this patient.

Reports of Cases.

TURNER'S SYNDROME, TWENTY YEARS AFTER TREATMENT.

By ZELMAN FREEMAN, M.R.C.P., M.R.C.P. (Edinburgh), M.R.A.C.P.,
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IN 1936 a young woman, then aged nearly twenty years, presented herself to a country practitioner in Carcoar, New South Wales. Her complaint was that she lacked feminine development and had never menstruated. She was given "Ovendosen" tablets containing 0·5 milligramme of stilbœstrol and 290 milligrammes of calcium phosphate, and was told to take three tablets a day for twenty-eight days and to recommence at the onset of menstrual bleeding. This she has done for twenty years, with the production three days after stopping the tablets of a regular menstrual flow lasting five or six days. Recently, on leaving the country, she failed to continue the treatment, and further menses did not appear. However, hot flushes supervened, and having consulted her acquaintances, she believed that she was passing through the "change". A "giddy turn" took her to a doctor, who found her hypertensive and referred her for investigation.

Examination revealed her to be a short woman (height four feet eleven inches), with smooth, unwrinkled facies and no evidence of masculinization. She had obvious webbing of her neck (Figure I), and the carrying angle of her arms was increased. Her span was three inches longer than her height. Pronounced webbing of her chin was also present. Toe webbing was absent, but other stigmata of the condition were present; these were low hairline (Figure II) and small nails. Her blood pressure was 200 millimetres of mercury, systolic, and 120 millimetres, diastolic. Femoral pulsation was strong, and the popliteal blood pressure was higher than the brachial. An X-ray examination of her chest revealed no evidence of coarctation of the aorta.

Her breast development (Figure I) was fair, but the nipples remained infantile. There was a small amount of hair in the axillæ and over the *mons pubis*. Pelvic examination (Dr. W. McBride) showed evidence of normal female genitalia, both internal and external. Salpingography revealed that both Fallopian tubes were blocked at their upper ends. Examination of her polymorphonuclear leucocytes for chromatin material indicated that she was "chromatin-negative" or genetically male. Estimation of the gonadotrophin excretion in her urine was not available.

Tests for red-green colour blindness gave negative results. Her skeleton was radiologically examined, and the bone age corresponded to her adult status; no evidence of osteoporosis was noted in her spine. Although small, the patient was strong, unlike a pituitary dwarf; moreover, she did not present the wrinkled skin on her face which was a characteristic noted by Albright in several of

his patients aged over thirty years. This is possibly due to the regular use of œstrogens; the lack of spinal osteoporosis may be due to the same mechanism.

Discussion.

The basic lesion in this case is probably intrauterine castration of an embryonic male at a very early stage of development leading to the production of a feminized fœtus. This can occur in both male and female embryos, and the syndrome is present in about 50% of subjects chromosomally male and in 50% chromosomally female. The degree of feminization of the final product varies with the time of onset of the adverse influence *in utero*; and Bishop considers that those males in whom the castration process takes place at a late stage *in utero* may be born as males, and sexual inadequacies may manifest themselves only at puberty.

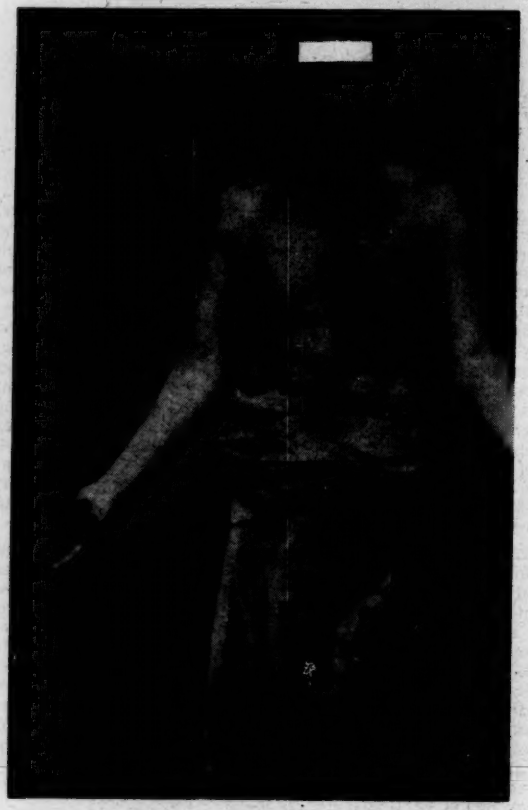

FIGURE I.

Thus a graduated spectrum of defective maleness may be explained. The present patient would stand at the lower end of the scale, and would technically be termed a male pseudohermaphrodite, provided that testicular tissue could be found. Similar patients, but having well-developed breast tissue in the absence of treatment, were described by Goldberg and Maxwell (1948) and by Stern and others (1956). It has been postulated here that the male gonad secretes œstrogens in sufficient quantity to produce normal feminine contours, a state of affairs unusual in Turner's syndrome.

Turner's syndrome and Klinefelter's syndrome are thought to be mirror images of each other. In the latter, with its picture of testicular atrophy, eunuchoidism and gynæcomastia, there is chromatin-containing material (female) in the cells (Plunkett and Barr, 1956; Jackson, Shapiro *et alii*, 1956). The "cuckoo organ", the testis, has active Leydig cells, which may account for the male physical appearance.

The appearance of hot flushes when the œstrogens were discontinued may well have been due to resecretion of gonadotrophins by the anterior lobe of the pituitary gland after the inhibiting effect of the œstrogens was removed. Most case reports give a high figure for gonadotrophins in Turner's syndrome.

The interest in this case lies mainly in the fact that the patient received the correct treatment before this condition was widely known in the English-speaking world, and is perhaps unique in having had twenty years' treatment. This has given her some degree of breast

FIGURE II.

development, but has failed to alter her small stature. On the other hand, it has enabled her to regard herself as normally feminine, and has possibly retarded the aging processes in the skin and prevented osteoporosis of the spine.

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THROMBOTIC THROMBOCYTOPENIC PURPURA.

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THROMBOTIC THROMBOCYTOPENIC PURPURA is characterized clinically by the triad of hæmolytic anæmia, thrombocytopenic purpura and neurological disturbances. The pathological lesions are multiple small vessel thromboses.

The syndrome was first described by Moschcowitz in 1925, and he suggested that the multiple "hyaline" thrombi seen in the small vessels were agglutinated red cells.

Baehr and his associates in 1936 described four cases and were the first to suggest that the occluding material seen in the small vessels represented "platelet thromboses". Keil (1937) suggested that the disease was related to the collagen diseases, and subsequent investigation has tended to support this postulation.

Many different names have been given to the disease entity as defined above; but Singer (1954) agrees with Meacham *et alii* (1952) that "the term thrombotic thrombocytopenic purpura be retained until a better understanding of the pathologic physiology of the condition permits the application of a better name".

According to Symmers (1956), 85 cases have been reported—59 in the United States, 15 in Great Britain, and the remainder in isolated reports from other countries. The following case report calls attention to the characteristic features of this syndrome and records several unusual features.

Clinical Record.

The patient was a white female, aged eighteen years, who was admitted to the University Hospitals of Cleveland, Ohio, United States of America, on March 17, 1956. She had been in good health until three months prior to her admission, when she experienced a sudden transient episode of numbness in her tongue spreading down the left side of her body. This sensation gradually subsided in fifteen minutes. Similar episodes occurred two months prior to her admission to hospital, and frequently thereafter. For three months the patient had noticed a tendency to bruise excessively associated with intermittent epistaxis lasting up to three days, and progressive general weakness. She consulted her local medical practitioner, who found severe anæmia and admitted her to a hospital for investigation. Apart from aspirin, the patient had not been taking any drugs, nor was she exposed to any chemical or other toxin. When she was aged seven years she had had jaundice, which subsided rapidly without sequelæ. Five months prior to her admission to hospital she had completed a normal pregnancy, and her past history was otherwise not remarkable. Investigations at the hospital to which she was first admitted revealed a hæmoglobin value of 9·6 grammes *per centum* and a platelet count of 179,000 per cubic millimetre, later decreasing to 50,000 per cubic millimetre. During the next two weeks the hæmoglobin value and platelet counts progressively diminished, although she received seven blood transfusions; jaundice and petechiæ developed, and she was referred to the University Hospitals for further investigation.

On her admission to the hospital she was seen to be a well-nourished, obviously jaundiced, pale white female. Her temperature was 98·4° F., her pulse rate was 76 per minute and her respirations numbered 22 per minute; her blood pressure was 140 millimetres of mercury, systolic, and 82 millimetres, diastolic. Petechiæ were obvious on the arms and legs, with ecchymoses in the antecubital fossæ at the site of previous venepunctures. A firm, slightly tender, splenic edge was palpable on deep inspiration. The liver was not enlarged, and no lymph nodes were palpable. A soft, high-pitched, systolic murmur was audible over the precordium. Neurological examination revealed no abnormality.

Examination of the peripheral blood gave the following information. The hæmoglobin value was 8·6 grammes *per centum*, the red cells numbered 2,680,000 per cubic millimetre, the hæmatocrit reading was 25%, the mean corpuscular volume was 94 cubic microns, the mean corpuscular hæmoglobin was 32 micromicrogrammes, the mean corpuscular hæmoglobin concentration was 34%, and the proportion of reticulocytes was 14·5%. The leucocytes numbered 3200 per cubic millimetre, 60% being polymorphonuclear cells, 3% non-segmented polymorphonuclear cells, 29% lymphocytes, 6% monocytes, 1% basophils and 1% eosinophils. Examination of a blood smear (Figure I) revealed anisocytosis and poikilocytosis; macrocytes, spherocytes, polychromatic and stippled erythrocytes were numerous, and there were many cells of bizarre shape. Platelets were diminished in the smear and numbered 15,000 per cubic millimetre. No clot retraction occurred in twenty-four hours.

Bone marrow examination revealed active marrow with normoblastic erythroid hyperplasia; megakaryocytes were abundant, but did not show evidence of platelet formation. The granulocytic series appeared normal.

The serum bilirubin content was 5·0 milligrammes per 100 millilitres, of which 0·2 milligramme was direct-reacting and 4·8 milligrammes were indirect-reacting. The urinary urobilinogen excretion was normal (0·5 Ehrlich unit per two-hour period). The direct Coombs test produced a negative response. The indirect Coombs test produced a negative result with both cDe/cDE and Cde/cde cells. Estimation of the osmotic fragility of unincubated red cells and of cells incubated at 37° C. for twenty-four hours revealed approximately 10% of cells with increased fragility. Screening tests for autohæmolysis at pH 6·1 and 8·1, performed at temperatures of 4°, 25° and 37° C., gave negative results.

A red cell survival time estimation, carried out by means of a radioactive chromium labelling technique, revealed that the half-life of the patient's erythrocytes was only three days, and no cell survived longer than eight days.

An L.E. cell preparation gave negative findings. The blood was group A, Rh-positive.

The administration of cortisone acetate, 300 milligrammes per day, was commenced on the day of the patient's admission to hospital, but did not affect the severity of the hæmolytic process or the thrombocytopenia. During the subsequent three days the hæmoglobin level dropped to 7·5 grammes *per centum*, and fresh petechiæ appeared. The mental state was periodically abnormal, the patient manifesting varying degrees of confusion, disorientation and drowsiness. These transient neurological phenomena in association with the thrombocytopenia and hæmolytic anæmia suggested the diagnosis of thrombotic thrombocytopenic purpura.

Because of the progressive deterioration in the patient's condition, splenectomy was performed on the fourth day after her admission to hospital. Prior to and during operation a transfusion of 1500 millilitres of fresh whole blood was given. She tolerated the surgical procedure reasonably well, but on the first post-operative day fever, hæmoglobinæmia and hæmoglobinuria developed, the hæmatocrit reading continued to decrease, and thrombocytopenia persisted. She received hydrocortisone intravenously, 300 milligrammes during the first post-operative day and 500 milligrammes daily thereafter; 1000 millilitres of blood were administered during the second and third post-operative days. However, her condition continued to deteriorate, and on the third post-operative day slight muscular weakness of the face and left arm was observed. At this time she became stuporose and then comatose, with manifestations of decerebrate rigidity, and died on the tenth day in hospital, five days after splenectomy.

Pathological Findings.

Post-mortem examination revealed numerous petechiæ throughout the organs of the body. The abdominal cavity contained 1400 millilitres of blood, and a large clot was present in the splenic bed.

Microscopic examination revealed multiple thrombi of amorphous acidophilic material occluding or partially occluding the lumina of arterioles and capillaries throughout the body (Figures II, III and IV). Similar lesions, typical of thrombotic thrombocytopenic purpura, were present also in the spleen removed at operation. The majority of thrombosed vessels showed varying degrees of increased cellularity, apparently due to endothelial proliferation. However, some occluded vessels showed very little pathological change in their walls.

The myocardium and brain were the most severely affected organs; in both there were scattered areas of localized necrosis, some of which were in relation to

his patients aged over thirty years. This is possibly due to the regular use of œstrogens; the lack of spinal osteoporosis may be due to the same mechanism.

Discussion.

The basic lesion in this case is probably intrauterine castration of an embryonic male at a very early stage of development leading to the production of a feminized fœtus. This can occur in both male and female embryos, and the syndrome is present in about 50% of subjects chromosomally male and in 50% chromosomally female. The degree of feminization of the final product varies with the time of onset of the adverse influence *in utero*; and Bishop considers that those males in whom the castration process takes place at a late stage *in utero* may be born as males, and sexual inadequacies may manifest themselves only at puberty.

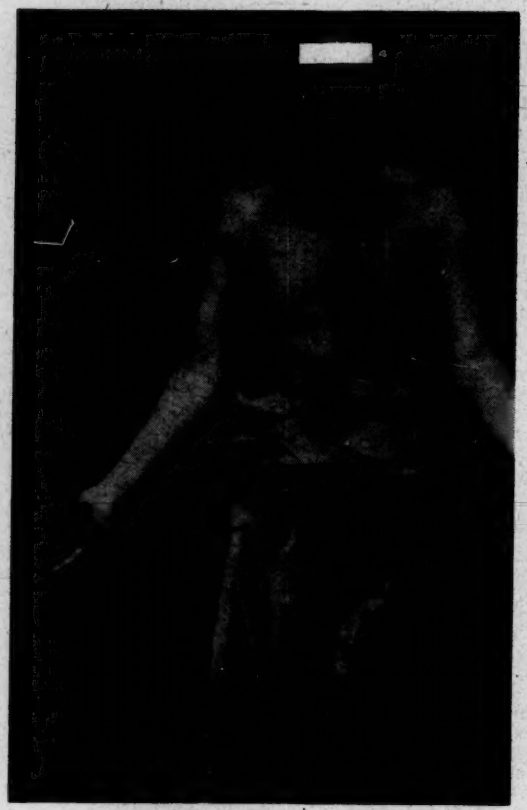

FIGURE I.

Thus a graduated spectrum of defective maleness may be explained. The present patient would stand at the lower end of the scale, and would technically be termed a male pseudohermaphrodite, provided that testicular tissue could be found. Similar patients, but having well-developed breast tissue in the absence of treatment, were described by Goldberg and Maxwell (1948) and by Stern and others (1956). It has been postulated here that the male gonad secretes œstrogens in sufficient quantity to produce normal feminine contours, a state of affairs unusual in Turner's syndrome.

Turner's syndrome and Klinefelter's syndrome are thought to be mirror images of each other. In the latter, with its picture of testicular atrophy, eunuchoidism and gynæcomastia, there is chromatin-containing material (female) in the cells (Plunkett and Barr, 1956; Jackson, Shapiro *et alii*, 1956). The "cuckoo organ", the testis, has active Leydig cells, which may account for the male physical appearance.

The appearance of hot flushes when the œstrogens were discontinued may well have been due to resecretion of gonadotrophins by the anterior lobe of the pituitary gland after the inhibiting effect of the œstrogens was removed. Most case reports give a high figure for gonadotrophins in Turner's syndrome.

The interest in this case lies mainly in the fact that the patient received the correct treatment before this condition was widely known in the English-speaking world, and is perhaps unique in having had twenty years' treatment. This has given her some degree of breast

FIGURE II.

development, but has failed to alter her small stature. On the other hand, it has enabled her to regard herself as normally feminine, and has possibly retarded the aging processes in the skin and prevented osteoporosis of the spine.

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THROMBOTIC THROMBOCYTOPENIC PURPURA.

By I. S. EPSTEIN,

Alfred Hospital, Melbourne.

THROMBOTIC THROMBOCYTOPENIC PURPURA is characterized clinically by the triad of hæmolytic anæmia, thrombocytopenic purpura and neurological disturbances. The pathological lesions are multiple small vessel thromboses.

The syndrome was first described by Moschcowitz in 1925, and he suggested that the multiple "hyaline" thrombi seen in the small vessels were agglutinated red cells.

Baehr and his associates in 1936 described four cases and were the first to suggest that the occluding material seen in the small vessels represented "platelet thromboses". Keil (1937) suggested that the disease was related to the collagen diseases, and subsequent investigation has tended to support this postulation.

Many different names have been given to the disease entity as defined above; but Singer (1954) agrees with Meacham *et alii* (1952) that "the term thrombotic thrombocytopenic purpura be retained until a better understanding of the pathologic physiology of the condition permits the application of a better name".

According to Symmers (1956), 85 cases have been reported—59 in the United States, 15 in Great Britain, and the remainder in isolated reports from other countries. The following case report calls attention to the characteristic features of this syndrome and records several unusual features.

Clinical Record.

The patient was a white female, aged eighteen years, who was admitted to the University Hospitals of Cleveland, Ohio, United States of America, on March 17, 1956. She had been in good health until three months prior to her admission, when she experienced a sudden transient episode of numbness in her tongue spreading down the left side of her body. This sensation gradually subsided in fifteen minutes. Similar episodes occurred two months prior to her admission to hospital, and frequently thereafter. For three months the patient had noticed a tendency to bruise excessively associated with intermittent epistaxis lasting up to three days, and progressive general weakness. She consulted her local medical practitioner, who found severe anæmia and admitted her to a hospital for investigation. Apart from aspirin, the patient had not been taking any drugs, nor was she exposed to any chemical or other toxin. When she was aged seven years she had had jaundice, which subsided rapidly without sequelæ. Five months prior to her admission to hospital she had completed a normal pregnancy, and her past history was otherwise not remarkable. Investigations at the hospital to which she was first admitted revealed a hæmoglobin value of 9·6 grammes *per centum* and a platelet count of 179,000 per cubic millimetre, later decreasing to 50,000 per cubic millimetre. During the next two weeks the hæmoglobin value and platelet counts progressively diminished, although she received seven blood transfusions; jaundice and petechiæ developed, and she was referred to the University Hospitals for further investigation.

On her admission to the hospital she was seen to be a well-nourished, obviously jaundiced, pale white female. Her temperature was 98·4° F., her pulse rate was 76 per minute and her respirations numbered 22 per minute; her blood pressure was 140 millimetres of mercury, systolic, and 82 millimetres, diastolic. Petechiæ were obvious on the arms and legs, with ecchymoses in the antecubital fossæ at the site of previous venepunctures. A firm, slightly tender, splenic edge was palpable on deep inspiration. The liver was not enlarged, and no lymph nodes were palpable. A soft, high-pitched, systolic murmur was audible over the precordium. Neurological examination revealed no abnormality.

Examination of the peripheral blood gave the following information. The hæmoglobin value was 8·6 grammes *per centum*, the red cells numbered 2,680,000 per cubic millimetre, the hæmatocrit reading was 25%, the mean corpuscular volume was 94 cubic microns, the mean corpuscular hæmoglobin was 32 micromicrogrammes, the mean corpuscular hæmoglobin concentration was 34%, and the proportion of reticulocytes was 14·5%. The leucocytes numbered 3200 per cubic millimetre, 60% being polymorphonuclear cells, 3% non-segmented polymorphonuclear cells, 29% lymphocytes, 6% monocytes, 1% basophils and 1% eosinophils. Examination of a blood smear (Figure I) revealed anisocytosis and poikilocytosis; macrocytes, spherocytes, polychromatic and stippled erythrocytes were numerous, and there were many cells of bizarre shape. Platelets were diminished in the smear and numbered 15,000 per cubic millimetre. No clot retraction occurred in twenty-four hours.

Bone marrow examination revealed active marrow with normoblastic erythroid hyperplasia; megakaryocytes were abundant, but did not show evidence of platelet formation. The granulocytic series appeared normal.

The serum bilirubin content was 5·0 milligrammes per 100 millilitres, of which 0·2 milligramme was direct-reacting and 4·8 milligrammes were indirect-reacting. The urinary urobilinogen excretion was normal (0·5 Ehrlich unit per two-hour period). The direct Coombs test produced a negative response. The indirect Coombs test produced a negative result with both cDe/cDE and Cde/cde cells. Estimation of the osmotic fragility of unincubated red cells and of cells incubated at 37° C. for twenty-four hours revealed approximately 10% of cells with increased fragility. Screening tests for autohæmolysis at pH 6·1 and 8·1, performed at temperatures of 4°, 25° and 37° C., gave negative results.

A red cell survival time estimation, carried out by means of a radioactive chromium labelling technique, revealed that the half-life of the patient's erythrocytes was only three days, and no cell survived longer than eight days.

An L.E. cell preparation gave negative findings. The blood was group A, Rh-positive.

The administration of cortisone acetate, 300 milligrammes per day, was commenced on the day of the patient's admission to hospital, but did not affect the severity of the hæmolytic process or the thrombocytopenia. During the subsequent three days the hæmoglobin level dropped to 7·5 grammes *per centum*, and fresh petechiæ appeared. The mental state was periodically abnormal, the patient manifesting varying degrees of confusion, disorientation and drowsiness. These transient neurological phenomena in association with the thrombocytopenia and hæmolytic anæmia suggested the diagnosis of thrombotic thrombocytopenic purpura.

Because of the progressive deterioration in the patient's condition, splenectomy was performed on the fourth day after her admission to hospital. Prior to and during operation a transfusion of 1500 millilitres of fresh whole blood was given. She tolerated the surgical procedure reasonably well, but on the first post-operative day fever, hæmoglobinæmia and hæmoglobinuria developed, the hæmatocrit reading continued to decrease, and thrombocytopenia persisted. She received hydrocortisone intravenously, 300 milligrammes during the first post-operative day and 500 milligrammes daily thereafter; 1000 millilitres of blood were administered during the second and third post-operative days. However, her condition continued to deteriorate, and on the third post-operative day slight muscular weakness of the face and left arm was observed. At this time she became stuporose and then comatose, with manifestations of decerebrate rigidity, and died on the tenth day in hospital, five days after splenectomy.

Pathological Findings.

Post-mortem examination revealed numerous petechiæ throughout the organs of the body. The abdominal cavity contained 1400 millilitres of blood, and a large clot was present in the splenic bed.

Microscopic examination revealed multiple thrombi of amorphous acidophilic material occluding or partially occluding the lumina of arterioles and capillaries throughout the body (Figures II, III and IV). Similar lesions, typical of thrombotic thrombocytopenic purpura, were present also in the spleen removed at operation. The majority of thrombosed vessels showed varying degrees of increased cellularity, apparently due to endothelial proliferation. However, some occluded vessels showed very little pathological change in their walls.

The myocardium and brain were the most severely affected organs; in both there were scattered areas of localized necrosis, some of which were in relation to

occluded vessels. However, in many organs, particularly the pancreas, there was extensive vascular occlusion, but no definite evidence of associated parenchymal ischæmic damage (Figure II). In the myocardium (Figure III) lysis of the muscle fibres with early organization indicated that the lesions were of moderately recent development. Their age was estimated to be within two or three weeks. The diffuse microscopic areas of infarction in the brain (Figure IV) appeared of more recent development than those in the myocardium. A few very recent macroscopic infarcts, approximately one centimetre in diameter, were also identified in the brain. These were of larger size than could be explained on the basis of occlusion of subjacent capillaries and arterioles, and were probably related to occlusion of slightly larger superficial cerebral arteries (diameter of 0·5 to 1·0 millimetre) in which thrombi were found. Also a few thrombi were identified in branches of cerebral arteries immediately distal to the circle of Willis, but no infarcts corresponding to occlusion of such large vessels could be recognized.

The lungs were free of vascular lesions, but scattered throughout the interalveolar septa were many multinucleated giant cells. These have been previously described and are thought by some to be megakaryocytes (Singer *et alii*, 1947; Trobaugh *et alii*, 1946).

Discussion.

This case illustrates the combination of anæmic, purpuric and neurological manifestations which constitute the diagnostic triad of this disease. However, any one of these three components may predominate. Several patients have been admitted initially to mental institutions because of the predominance of bizarre cerebral symptoms (Goldenberg *et alii*, 1950). In a recently reported case the patient presented with convulsions and was diagnosed as suffering from a cerebral tumour (Soumerai and MacGillivray, 1956).

Hæmolytic anæmia, without purpura and responding to splenectomy, has been the mode of presentation in two cases (Meacham *et alii*, 1951; Gardner *et alii*, 1951). The later development of thrombocytopenic purpura and neurological abnormalities suggested the diagnosis of thrombotic thrombocytopenic purpura, which was confirmed by retrospective examination of the spleen removed at operation, and at autopsy.

All the diagnostic criteria of severe hæmolytic anæmia, including the demonstration of a very short red cell survival time, were manifest in the case under discussion. The mechanism of this hæmolytic phenomenon is unknown. All tests for the detection of an acquired immunological mechanism gave negative results. An attempt to demonstrate some serum factor affecting the patient's circulating cells was unrewarding. The incubation *in vitro* of the patient's serum with normal red cells at 37° C. for forty-eight hours failed to alter the morphology or the osmotic fragility of the normal cells to a greater degree than did normal serum. The leucopenia present in this patient was unusual, leucocytosis or even leuchæmoid reaction being much more frequent (Singer, 1954).

The patient was afebrile on her admission to hospital, and remained so during the period of observation prior to splenectomy. This lack of febrile response is most unusual and may have been consequent to the cortisone therapy instituted on her admission to hospital. The original reports of the disease (Moschcowitz, 1925; Baehr *et alii*, 1936) describe the condition as "an acute febrile" anæmia, and Singer (1954), in a comprehensive review, states that elevation of the temperature is consistently present.

The recurrent episodes of transient unilateral numbness were not explicable in terms of specific pathological lesions. The variable confusion and drowsiness during the final weeks of life suggested a diffuse neurological disorder, and in this case there was pathological evidence of widespread focal lesions in the brain, consisting of microscopic and a few macroscopic infarts. However, as has been reported in other cases (Adams *et alii*, 1948), the age of the infarcts as determined microscopically and the number of lesions do not correlate closely with the duration and severity of clinical symptoms. The terminal weakness of the left arm and the face existed for forty-eight hours before death, but no infarct of corresponding situation could be demonstrated. This paresis may have resulted from the development of a sufficient number of microscopic lesions to interrupt a significant proportion of the pyramidal system at some level. The absence of any infarct of sufficient size to correlate with occlusion of the major branches of the circle of Willis as described suggests that these developed only a few hours before death. The arterial thrombi in the large and medium-sized cerebral arteries have not been previously described, and no satisfactory explanation of their presence can be given.

Histological diagnosis of this disease by examination of material obtained by biopsy from readily available tissues —for example, skin, gum, muscle and lymph nodes—has been disappointing (Symmers, 1956). This author suggests that combined rib, muscle and skin biopsy may be the method of choice. Cooper *et alii* (1952) demonstrated the pathognomonic vascular lesions in prepared paraffin sections of fragments of material obtained by sternal marrow puncture.

The pathogenesis of this disease is unknown. Pathologically it is characterized by the presence throughout the body of complete or incomplete occlusions of small arteries, arterioles and capillaries by an amorphous acidophilic material. The suggestion by Baehr *et alii* (1936) that the occluding material represented agglutinated platelets has been generally accepted since. Orbison (1952) demonstrated the existence of microaneurysms, particularly at the arterio-capillary junction, and emphasized that the primary lesion was a destructive one involving the vascular wall. Gore (1950) had previously described a "prethrombotic" vascular lesion interpreted as an alteration in the intercellular cement substance. There is a similarity between the histological lesions of the vascular occlusions of the Schwartzman phenomenon (Schwartzman *et alii*, 1936) and the lesions under discussion. These observations provide a morphological basis for the concept that thrombotic thrombocytopenic purpura is a vascular disorder of the collagen disease type. The disease has been included in a recent monograph on the collagen diseases (Talbot and Ferrandis, 1956), although its classification with the collagen diseases must be considered a tentative one at the present time. As in certain of the collagen diseases, hypersensitivity reactions have been incriminated as being of ætiological significance. Sensitization has been noted to sulphonamides, penicillin, formaldehyde and adhesive tape in reported cases of thrombotic thrombocytopenic purpura (Symmers, 1956), though the significance of such sensitization is not certain.

There is no known effective treatment. Despite the possibility of an underlying hypersensitivity reaction, the great majority of reported cases were not influenced by cortisone or adrenocorticotrophic hormone administration (Singer, 1954; Adelson *et alii*, 1954; Green and Green, 1953).

Splenectomy has been reported in nine previous cases (Singer, 1954). In seven no effect was observed, and the patients died in the immediate post-operative period. In the other two cases splenectomy was performed on patients presenting with acquired hæmolytic anæmia without purpura. The immediate response was satisfactory, but the patients later developed neurological disturbances and thrombocytopenia and died with typical manifestations of thrombotic thrombocytopenic purpura.

Blood transfusions provide the only means of prolonging life; but their beneficial effect is short-lived because of the very active extracorpuscular hæmolytic mechanism. This is well demonstrated in the present case, in which the survival time of the red cells (a mixed population of the patient's own and previously transfused cells) was only eight days.

Platelet transfusions (Stefanini and Dameshek, 1953) are of no value, since the platelets are removed from the circulation very rapidly (Adelson and Stefanini, 1952). The use of anticoagulant therapy to limit the development of the thrombotic lesions has been suggested, and heparin

has been advised (Singer *et alii*, 1950) and used (Adelson and Stefanini, 1952) without effect. However, there is no real foundation for this treatment, as the basic lesion is probably in the vascular wall, the thrombi being secondary, and anticoagulant therapy is hazardous in a disease characterized by thrombocytopenia and purpura.

Summary.

1. Thrombotic thrombocytopenic purpura is defined as a rare disorder characterized clinically by the triad of hæmolytic anæmia, thrombocytopenic purpura and neurological disturbances, and pathologically by widespread vascular thrombotic lesions. The pathogenesis is unknown, although it has tentatively been included in the collagen disease group.

2. The case reported is unusual, in that the patient was afebrile prior to splenectomy, there was leucopenia rather than leucocytosis, and thrombi were demonstrated in large branches of the cerebral arteries.

3. The hæmatological, neurological and pathogenetic phenomena are discussed and the inadequacy of treatment is indicated.

Acknowledgements.

This work was done during the tenure of the Melbourne Fellowship in Medicine at the Western Reserve University, Cleveland, Ohio. I am indebted to Dr. Austin Weisberger for permission to publish this case report. I wish to thank Dr. Lowel Lapham and Dr. George Sorenson for help with the pathological investigation, and Dr. C. F. Hinz, junior, for his assistance in the preparation of the manuscript.

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Legends to Illustrations.

FIGURE I.—Peripheral blood smear (Wright's stain). There are anisocytosis and poikilocytosis, with spherocytes, macrocytes and cells of bizarre shape (×1000).

FIGURE II.—Pancreas: hæmatoxylin and eosin stain. There are four small vessels occluded by hyaline material and showing endothelial proliferation. The surrounding parenchyma appears normal (×370).

FIGURE III.—Myocardium: hæmatoxylin and eosin stain. On the right is an occluded vessel. In the centre of the field most of the muscle fibres have been destroyed by infarct necrosis and replaced by characteristic fibrosis (×275).

FIGURE IV.—Cerebellar cortex: hæmatoxylin and eosin stain. The focal pale area represents partial ischæmic necrosis in the granular layer. At the top of the pale area is a small vessel (arrow) which is occluded (×150).

VERTEBRAL HÆMANGIOMA.

By BERNARD LAKE, M.R.C.P.,
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VERTEBRAL HÆMANGIOMA is a common finding, if sought for, at autopsy. Makryocostas (1927) found one or more of these tumours in 12 out of 41 spinal columns. Schmorl (1932), summarizing his own and his colleagues' findings, found angiomata in 409 out of a total of 3829 spinal columns investigated (incidence 10·7%). The lesion was somewhat more common in females (12·5%, as against 8·9% in males) and the incidence appeared to increase with age. The tumours were multiple in just under one-third of cases, and were most commonly sited in the thoracic, lumbar, sacral and cervical vertebræ in that order.

Diagnosis during life is uncommon, because the great majority of patients remain asymptomatic, and also because the symptoms or findings may not be severe enough to warrant the diagnostic radiological examination or the bony involvement gross enough to be recognized when this is made. Perhaps, also, it is time for reassessment of the post-mortem material and of the criteria for diagnosis.

Five cases are reported here, and some aspects of the condition are discussed.

Clinical Records.

CASE I.—A., a man, aged fifty-four years, maintenance engineer, presented in July, 1956, with the history of severe central back pain, which did not radiate and was dull in nature. This pain always started at the end of the day after he had stopped working, and could be relieved by further exercise. It lasted for one to two hours, and then ceased spontaneously. There was nothing relevant in his past history. His work involved a good deal of awkward posturing and movement on the machines. Apart from this pain he felt well. On examination, he pointed over the spines of the twelfth thoracic and first lumbar vertebræ as the site of pain, but no tenderness was elicited on pressure; nor was tenderness present in any other site. His trunk movements were full and painless in all directions. Repeated toe-touching followed by a rest did not bring the pain on. No abnormality was detected in his abdomen on rectal examination, in his nervous system or in his urine. He was reassured and advised to take *Tabellæ Codeini Compositæ* from one to two hours before he finished work, and to report in two weeks.

At that time he reported that the symptoms were exactly as before. He was fully reexamined, but again no abnormality was detected. X-ray examination of the dorso-lumbar part of his spine revealed some early osteoarthritic changes and a hæmangioma of the body of the second lumbar vertebra, with early involvement of the third lumbar vertebra (Figures I and II). When this was found, a bruit was unsuccessfully sought for before and after exercise. He was advised to wear a low back support while at work, and when he was examined again in one month he was asymptomatic. In the absence of further symptoms he was advised to report in three months; there was then no change.

CASE II.—B., a female patient, aged fifty-two years, presented with the history that in January, 1956, she had slipped and fallen heavily on her buttocks. Her spine was aching and tender for about one week after this. Two weeks later, while running for a bus, she experienced severe right lumbar pain; this lasted for three weeks. When she was first examined in February, 1956, she said that the pain was now decreasing with infra-red therapy. On direct questioning, she admitted that she had paræsthesiæ in her legs at night. On examination of the patient no tenderness over the back was elicited and no abnormality was detected in her nervous system. An X-ray examination of her spine revealed appearances suggestive of an angioma of the third lumbar vertebra (Figures III and IV). The serum calcium content was 5·8 milliequivalents per litre, the phosphorus content 2·3 milliequivalents, the serum alkaline phosphatase content 7·6 King-Armstrong units, and the uric acid content 4·9 milligrammes per 100 millilitres. She was given a low back support, which controlled the pain.

In May, 1956, she had an exacerbation of pain in the back, along with generalized aching in many joints. She had slight thoraco-lumbar scoliosis to the left, but spinal movements were full. These pains settled on the administration of sodium salicylate. Further X-ray examination at this time revealed no change.

In November, 1956, she said that she felt well as long as she wore her support. Another X-ray examination (Figures V and VI) at this time revealed no change in the vertebral appearance.

CASE III.—C., a female patient, aged fifty-eight years, presented in October, 1951, with the history of recurrent back pain after a fall down the full length of a ship's companionway nine months before. This pain ran across the lumbo-sacral region towards the upper margin of the sacrum. On examination of the patient there was no tenderness on pressure, and spinal movements were full. There was slight fullness in the upper sacral region. There was no evidence of motor or sensory loss in the lower limbs, although walking caused pain, sciatic in type. The left knee jerk was very sluggish, and the right was not elicited; the plantar reflexes were not elicited. The patient had no bowel or bladder troubles. An X-ray examination of the spine revealed an angioma of the second lumbar vertebra (Figures VII and VIII). She was given deep X-ray therapy to a total dosage of 3000*r* over one field in ten divided doses.

By December, 1951, she had experienced great symptomatic improvement. This was maintained in March, 1952.

In May, 1952, she fell in the sitting position, and when examined ten days later said that she had been unable to sit without discomfort. Tenderness was present in the right ischial area extending to the coccyx. X-ray examination did not reveal any bony lesion.

In August, 1952, she had no pain in the back, but had dysuria of recent onset, with visible swelling of the urethral orifice. No abnormality was detected on vaginal or rectal examination. X-ray examination revealed little change in the second lumbar vertebra (Figure IX). There was no change in the other physical signs. The urethritis cleared and did not recur, and she had no further abnormality of micturition.

When she was last examined, in February, 1953, she was asymptomatic, and was told to report only if further symptoms developed.

CASE IV.—D., a female patient, aged sixty-seven years, a known diabetic, presented in March, 1955, with a history of severe backache since she had sustained a fall during insulin coma three weeks before. On examination, she was tender over a wide area of the lower part of her back. The only significant findings in the nervous system were absent knee and ankle jerks and diminished biceps and triceps tendon reflexes on both sides. An X-ray examination in May, 1955, revealed collapse of the fourth lumbar vertebra (Figures X and XI) and spondylitic changes throughout the spine. Owing to her frail condition, the collapse of this vertebra was thought to be due to a metastasis from an undiscovered primary malignant neoplasm. A search for such a primary lesion was unsuccessful. Early in July, 1955, the patient was admitted to the Royal Prince Alfred Hospital in diabetic coma and died on the following day.

At autopsy no neoplasm was found. Examination of sections (Figure XII) of the collapsed vertebra was reported on as follows:

> There is an angioma of the vertebra. The appearances suggest a fracture undergoing repair which is a mixture of endochondral and direct ossification. The reason for the fracture appears to be an angioma.

CASE V.—E., a male patient, aged forty-four years, presented in June, 1951, with pain in the back. No nervous signs were detected. The clinical notes make no further statements as to symptoms or signs. An X-ray examination revealed a change in the fifth thoracic vertebra, which was first stated to be monostatic Paget's disease and later, on review, to be an hæmangioma. Between June and September, 1951, on the basis of the latter diagnosis, he received X-ray therapy, five doses each of 400*r* and five doses each of 300*r*, and in December, 1951, he reported that he was asymptomatic. He did not attend the follow-up clinic.

Discussion.

It is apparent in four of the cases presented that the diagnosis of vertebral hæmangioma was made radiologically. First worked out by Gold (1926) and confirmed by Perman (1927), by Bailey and Bucy (1929) and by Schmorl (1932), this radiological picture has been accepted as pathognomonic. The correlations depend upon the fact that all vertebral hæmangiomata reported till then and to date have been cavernous in type. In this variety, vertical thickened trabeculæ are formed among the enlarged blood spaces, supplanting the cancellous centrum where the angioma is usually first detected. This produces the characteristic appearance of Figures I to IX—*i.e.*, "a reduction of bone density between parallel trabeculæ which are increased in density" (Bailey and Bucy, 1929).

It is of interest that Sherman (1944) was able to collect five reports of capillary hæmangioma involving bones other than vertebræ, and it is possible that this type has not been recognized in the spine. Apropos of this possibility, Lichtenstein (1950), admitting that his term "aneurysmal bone cyst" was unsatisfactory, described a benign lesion in which "it is the presence of unusual, dilated and engorged vascular channels that hallmarks the lesion cytologically", and argued that "altogether it would appear that if the vascular channels in question represented preformed blood channels, and this seems to be the case, they would have to be regarded as enormously distended and attenuated capillaries and venules, rather than larger veins or arteries". Hadders and Osterdoom (1956) examined complete specimens — Lichtenstein's were curettings from operations—and concluded that aneurysmal bone cyst, a disorder of the young, was merely an earlier-developing, faster-expanding form of hæmangioma, complementary to the more mature and later-developing type reported here. Sherman (1944) commented that in some of the five cases the histological picture combined capillary and cavernous features. Finally, in this respect, Jensen (1954) presented a patient, aged fifty-six years, with a vertebral lesion at first diagnosed as an angioma, and then as Jaffé-Lichtenstein disorder (aneurysmal bone cyst).

Willis (1953) distinguished hæmangioma from true neoplasm, because it does not possess the power of progressive

TABLE I.

Summary of the Features of 198 Recorded Cases of Vertebral Hæmangioma.[1]

Author.	Number of Patients.	Sex. (M. : F.)	Age. (Years.) (40− : 41+)	Distribution.				Subjects with Multiple Lesions.	Symptoms.		Treatment by Deep X-Ray with Laminectomy.	Asymptomatic or Improved after Deep X-Ray Therapy with or without Laminectomy.
				Cervical.	Thoracic.	Lumbar.	Sacral.		Pain Alone.	Cord Compression Signs.		
Schlezinger and Ungar (1939)	2	2:0	1:1	—	2	—	—	—	—	2	2	1
Collected by Schlezinger and Ungar.	45	13:31	27:16	4	50	11	—	1 with 6 3 with 4 2 with 3 4 with 2	3	27	30	21
Ghormley and Adson (1941).	39	12:27	—:39	1	14	25	—	1 with 2	9	10	17	11
Thomas (1942)	2	1:1	1:1	—	5	—	—	1 with 4	—	2	2	2
Stettbacher (1949).	9	5:4	3: 6	—	9	1	—	1 with 2	3	6	9	5/8
Collected by Stettbacher.	44	26:16	19:22	1	28	15	—	1 with 4 2 with 2	6	26	21	15
Cocchi (1953) ..	26	12:14	2:19	1	16	13	—	4 with 2	15	4	19	13
Lake (1957) ..	5	2:3	—:5	—	1	5	—	1 with 2	5	—	2	2
Collected by Lake.	26	8:9	8:9	1	11	12	—	2 with 2	3	6	15	12
Total ..	198	81:105	66:118	8	136	82	—	1 with 6 5 with 4 2 with 3 15 with 2	44	83	117	82

[1] Discrepancies in the table are due to incomplete data in the original papers.

disproportionate growth. Thomas (1942), reviewing the angiosarcomata of the Bone Sarcoma Registry, considered that these were malignant *de novo*, and that no benign angioma of bone became malignant. Certainly most authors are agreed that vertebral hæmangioma *per se* is a benign lesion. However, whilst the majority of those discovered in life do not produce symptoms, a considerable percentage will do so at some time by pressure effects on the spinal cord or nerve roots.

Table I summarizes the clinical features of 198 cases in the literature. From this it may be seen that just under half (42%) produced some signs of cord compression—from minimal signs to complete paraplegia. None of the present cases are listed in this category, despite the presence of nervous signs in two, for in both the relation of these to the hæmangioma was indeterminable, and other factors such as trauma or diabetes were also present. Spinal cord or nerve root compression occurs at an earlier age than in asymptomatic cases, and is more likely to occur in involvement of the thorax, where the cord is larger and the vertebral canal smaller (Ghormley and Adson, 1941).

The mechanism of cord involvement is worth consideration, for herein lies the practical importance of this uncommon cause of paraplegia. In eight cases (Ghormley and Adson, 1941; Bell, 1955) spinal involvement was produced by compression fracture of a vertebra, always with a history of preceding trauma, apparently not by pathological fracture through the hæmangioma. It is generally considered that a hæmangiomatous vertebra is as strong as a normal one. In another eight cases there was an associated discrete epidural angioma (Schlesinger and Ungar, 1939). The majority are said to produce their effects by the process of "blowing up" of the vertebra (as first described by Makryocostas, 1927). The angioma extends into the neural arch, and a process of thickening of the body and arches may result from the sequence in the angioma of thrombosis, œdema, increase in static pressure, bone resorption and further bone formation ultimately encroaching on the cord and its coverings. Direct percortical expansion has not been described.

The possibility of cord compression should thus always be borne in mind when diagnosis is made, even in asymptomatic subjects. Once signs of cord involvement are present, these must be remedied as soon as possible before myelopathy becomes irreversible.

In many of the cases recorded in Table I the angioma was an accidental discovery, usually on the basis of investigation of persistent or recurrent pain. Pain may be a feature of hæmangioma in any site, especially when it is involved in thrombosis, but it is so far clinically impossible to affirm or deny whether vertebral angioma is a cause of back pain. Disappearance of the pain on treatment is gratifying to patient and doctor; but can relief of pain from a corset, as in two cases in the present series, be construed as radical therapy?

Table II summarizes the effects of treatment of vertebral hæmangioma when cord compression was evident. Improvement at this stage may, perhaps, more fairly be said to result from any given treatment. Radical treatment has been (i) by deep X-ray therapy, (ii) by laminectomy and (iii) by a combination of these two methods. Deep X-ray therapy is said to produce its effect by sclerosis of the angioma. No change in radiological appearance was noted in this series or in the great majority of cases reported and followed over periods up to fourteen years after this treatment. There have been no pathological reports on patients so treated. However it produces its effect, it is clinically successful. Laminectomy only partly removes the angioma, and its prime intention is as a decompressive operation. It is a hazardous procedure, as profuse bleeding is a constantly reported feature, and it is difficult to control. In the small series recorded it may be seen that laminectomy is more effective when accompanied by deep X-ray therapy. As deep X-ray therapy alone is equally effective in ameliorating symptoms of cord compression, laminectomy should be undertaken only when there is strict indication for it.

These indications are: paraplegia, of sudden onset or complete; signs of rapidly progressive cord involvement; or the failure of deep X-ray therapy.

Deep X-ray therapy must be individualized. In an average case up to 3000r (measured in air) has been required, given over six to eight weeks in ten visits to one direct field. Repetitions may be necessary over the subsequent twelve to eighteen months. Symptomatic improvement seems to outstrip reversal of signs of cord damage and is often apparent long before any change in the signs. In most cases the improvement is maintained, and regression is rare.

TABLE II.

Results of Radical Treatment of Vertebral Hæmangioma Causing Signs of Cord Compression Collected from 198 Cases in the Literature.

Result.	Laminectomy Alone.	Deep X-Ray Therapy. Alone.	Laminectomy *plus* Deep X-Ray Therapy.
"Cure"	6 } 11	9 } 16	16 } 22
Improvement	5	7	6
No improvement	2	3	6
Operative deaths	6	—	—
Unknown	4	—	—
Total	23	19	28

Summary.

1. Five cases of vertebral hæmangioma are presented. All were discovered accidentally, in the course of investigation of persistent or recurrent back pain. (The pain was probably coincidental and not due to the angioma.) Nervous signs were present in two, but were probably not attributable to the angiomata. In one case two vertebræ were involved, and in one case there was a compression fracture through the angioma.

2. The patho-radiological basis for diagnosis during life is considered.

3. One hundred and ninety-eight cases from the literature are collected and some of their features are considered.

4. The indications for, and the type of, radical treatment are considered in relation to the complications of the condition. The fact is stressed that though vertebral hæmangioma is a rare cause of spinal cord compression, it is also a reversible one.

Acknowledgements.

I should like to thank Dr. H. Ham, Dr. C. Hambly and Dr. Max Lake for their kindness in referring their patients, and Dr. V. J. McGovern for access to the sections from Case IV.

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Addendum.

Since this paper was prepared, a sixth case has been seen, the clinical details of which are as follows.

F., a widow, aged sixty-eight years, in April, 1956, during a barium meal X-ray examination for gastro-intestinal symptoms of forty years' standing, was noticed to have some abnormality of the lumbar part of the spine, and the patient was told that she had a hæmangioma in one of the lumbar vertebræ. She remained asymptomatic, except for her intestinal symptoms, until November, 1956, when she experienced a sudden severe pain in the lower part of the back, radiating down both legs and up the dorsal part of the spine, with some pain in the neck, but none in the arms. The pain in the legs went to the insteps of the feet. Her condition improved with rest, the exhibition of codeine and the wearing of a spinal brace. She had had some bilateral weakness in the lower limbs, some incoordination, and lately some loss of feeling in the left lower limb. She was a known diabetic of seven years' observation. Five years earlier she had had what were considered to be three cerebral thromboses affecting the right side of the body, from which she had apparently recovered.

On examination, the patient was very obese. Forward flexion and twisting were greatly limited; extension and lateral bending just less than normal. Great tenderness was present over the fifth lumbar and first sacral spines, and moderate tenderness over the sciatic nerves. There was no bruit over the back. Straight leg raising was carried out to 90° on the right side and 75° on the left; Homans's sign was not elicited. The patient had no difficulty with micturition. There was weakness of both lower limbs, mild on the right, severe on the left, in all muscle groups save the thigh adductors. The circumference of the right thigh was one inch more than that of the left, and the circumference of the right calf was 0·8 inch more than that of the left calf. The tone was less on the left than on the right. Tests of sensation revealed that appreciation of light touch was diminished on the left in comparison with the right side, in relation to the posterior column distribution. The response to the great toe test was normal, and the heel-knee test produced similar results on both sides. The response to the tuning-fork test was absent on the left, diminished on the right. There was no difference in the responses to tendon pressure. Sensation in relation to lateral spino-thalamic tract distribution was diminished over the whole left lower limb. The knee jerks and ankle jerks were equal and exaggerated on both sides, and there was no ankle clonus. The plantar reflexes were equivocal. There were no fasciculations. An X-ray examination revealed an angioma of the second lumbar vertebra.

Comment.

This patient has an incomplete mononeuritis of the left lower limb, and presumably some residual weakness from her cerebral thromboses five years earlier. The findings are compatible with a diabetic lesion (although there are no signs of vascular disorder), or with multiple nerve root pressures from the angioma or from multiple intervertebral disk prolapse. On the supposition that angioma is the cause, she is at present receiving deep X-ray therapy to the tumour, 2000*r* being given in divided doses.

CLOSURE OF A CHEST WALL DEFECT WITH TANTALUM MESH GAUZE.

By J. S. INDYK, F.R.C.S., and F. F. RUNDLE, M.D., F.R.A.C.S.,
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UNTIL recently the closure of chest wall defects has presented a very serious problem to surgeons. Many procedures have been practised and discarded because of serious complications. Chest wall defects present problems which are quite different from defects elsewhere in the body, except perhaps in the skull.

Because adequate respiration depends on the presence of a solid chest wall against which the lungs can recoil, a large defect can result in lung herniation with serious sequelæ, such as paradoxical respiration. Such paradoxical respiration produces improper ventilation of the affected pulmonary tissue, so that air with low oxygen and high carbon dioxide content is added to the inspired air. Thus anoxia is produced in a degree proportionate to the amount of paradoxical movement. The cough mechanism is also impaired, which further aggravates the problem of proper ventilation. The fear of these complications after inadequate repair of defects has been a deterrent to extensive ablative surgery in the treatment of malignant disease of the chest wall.

Vulpius (1900) was probably the first surgeon to attempt repair of a lung hernia by using ribs as struts to bridge the defect. Iodized packs, periosteum, strips of *fascia lata* and dermal grafts have all been tried since. Beardsley (1950) used tantalum plate in three cases, but profuse serous discharge necessitated removal of the foreign body; however, the repair remained sound because of a dense fibrous reaction giving stability to the chest wall.

Following a report by Koontz (1948) on the successful use of tantalum mesh in the repair of ventral herniæ, this material was first used experimentally in the chest wall of dogs by Morrow (1951). He subsequently treated one patient and was, in fact, the first to report successful closure of a wide chest defect in the human in 1951, using tantalum gauze.

It appears that the gauze provides a lattice of non-reactive material, which is penetrated rapidly by fibroblasts. The gauze becomes incorporated in dense fibrous tissue, thus forming a fibrotic wall giving stability to the chest. No untoward reaction occurs from direct contact between the gauze and the underlying lung. Morrow, in his experiments, found that an endothelial layer, similar to pleura, was formed on the surface in contact with the lung.

Since that time further reports have been published by Ada and Hevenor (1951), by Beardsley and Cavanagh (1951), by Rider (1951) and by Effler (1953) on their experiences with tantalum gauze. Effler, however, observed in follow-up studies that the tantalum gauze tended to fracture and disintegrate with the passage of time, and he recommended the use of stainless steel gauze. When full-thickness skin and muscle are not available to cover the mesh, as after radical mastectomy with mediastinal node clearance, difficulty is experienced with this form of prosthesis. As the gauze becomes fragmentated, not only is stability threatened, but fragments of metal may work their way through the thin overlying skin, producing sinuses. Southwick *et alii* (1956) have recently used poly vinyl formalinized ("Ivalon") sponge to close large defects, with excellent results. However, the sponge cannot be used in the presence of infection and may have to be removed.

Since the thoracic cage is solid, yet in constant motion, any acceptable method of repair should offer the properties of mobility as well as strength. Tantalum or stainless steel gauze or polyvinyl ("Ivalon") sponge satisfies these requirements admirably.

As an illustration of this, we wish to report the successful closure of a very large chest wall defect with tantalum gauze, after the removal of a fibroma of a rib.

Clinical Record.

A female patient, aged 30 years, presented on May 18, 1955, with a four weeks' history of painless swelling in the posterior axillary fold. The swelling was oval in shape, measuring 5·0 by 6·25 centimetres, and was situated over

FIGURE I.
Showing solid, encapsulated tumour attached to the eighth rib.

the left eighth rib in the posterior axillary line. The swelling was hard and fixed, but was not attached to the overlying skin. Small lymph nodes were palpable in both axillæ. An X-ray examination of the ribs did not reveal any underlying rib abnormality. A tentative diagnosis of fibrosarcoma of the left eighth rib was made.

On June 14 an operation was performed and the seventh, eighth and ninth ribs were removed, in continuity with the associated intercostal muscles and pleura, from the chondro-costal junction anteriorly to beyond the angles of the ribs posteriorly (the eighth rib was removed at the costo-vertebral junction.) A defect measuring 18 by 10 centimetres resulted. The tumour, on examination of sections, was found to be solid and encapsulated.

The defect was then bridged by tantalum gauze (50 by 50 mesh, 0·003 inch diameter), which was sutured to the intercostal muscles above the sixth rib and below the tenth rib and to the *erector spinæ* muscles. This was then covered with muscle and skin. The chest was drained by an underwater catheter, which was removed in forty-eight hours, the lung having fully expanded by that time. The patient made an uneventful recovery, and was discharged from hospital on the fourteenth post-operative day. At no time after operation was it necessary to aspirate the chest. The tumour was examined histologically by Dr. K. Viner Smith, of the Royal North Shore Hospital, Sydney, who reported on it as follows:

> *Macroscopic.*—The specimen is portion of three ribs (the longest 16 cm.) with soft tissue between. Attached to the outer surface of these ribs is an ovoid tumour 6 cm. along the ribs, 4 cm. wide and 3 cm. high. The tumour is pale and firm and appears encapsulated. Some muscle overlies it.
>
> *Microscopic.*—The mass is composed of spindle-shaped fibrous tissue cells and nuclei together with a considerable amount of collagen. The part of the surface examined is sharply defined and is not invading. Histologically this is a benign fibroma. It is recognised, however, that such an appearance is, in rare cases, compatible with recurrence and even metastases.

On October 5 the patient was feeling well and carrying out normal activities, including swimming. An X-ray examination of the chest showed the gauze mesh to be intact (Figures II and III). Twelve months after operation

a further X-ray examination revealed a longitudinal fracture in the gauze (Figure IV). However, there was no evidence of paradoxical respiration, and only a small bulge over the defect on coughing.

Sixteen months after her operation the patient underwent cholecystectomy and choledochostomy for cholelithiasis and presented no anæsthetic difficulties. She remains well, swims, runs, and does all her housework. The fracture in the tantalum gauze has not widened.

Summary.

1. Closure of chest wall defects with tantalum gauze and recently with polyvinyl formalinized ("Ivalon") sponge is adequate to prevent complications such as paradoxical respiration and lung herniation.

2. A case is presented of successful closure of a chest wall defect with tantalum gauze, after the wide removal of three ribs for a fibroma of a rib.

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Legends to Illustrations.

FIGURE II.—Lateral view of the chest with tantalum mesh gauze in position.

FIGURE III.—Antero-posterior view of the chest, with tantalum mesh gauze in position.

FIGURE IV.—Showing the presence of fractures in the tantalum mesh gauze.

HINDQUARTER AMPUTATION FOR SARCOMA OF THE FEMUR.

By NORMAN WYNDHAM,
Sydney.

FROM the patient's point of view, radical operations for carcinoma are not infrequently of doubtful value. Questions of philosophy rather than pathology must often determine treatment. Yet when such operations, even mutilating ones, are indicated, they must be carried out with thoroughness and determination. Unless a growth can be removed completely, it is better left alone or treated by irradiation.

In the case reported here, eight years after operation, the patient is happy and well, very active, in full employment and the father of a family.

Clinical Record.

The patient, aged twenty-four years, was examined on May 1, 1949. For the past three years he had complained of pain in the right hip, occurring about once a week. This was of minor character until six weeks before his examination, when it became constant and knife-like. It was situated on the lateral aspect of the right hip, and radiated down the outside of the thigh and calf. It was present equally day and night, but was not aggravated by walking. He had lost one and a half stone in weight in two months. However, he had no other symptoms or complaints. An X-ray examination was carried out on May 7 and the report was as follows (Figure II):

> There is an area of osteoporosis in the greater trochanter. This extends medially into the sub-capital area superiorly, and slightly downwards into the shaft. Over the lesion, several layers of periosteal new bone are seen, more especially on the distal part close to the shaft. In one area the periosteal new bone appears to have been perforated. There are three possibilities:
>
> (1) Tuberculosis or simple osteomyelitis.
>
> (2) Gumma.
>
> (3) New growth. This may also include a reticulosis.

At operation on May 12, an incision was made over the great trochanter. Invasion of muscle and fascia by tumour growth was obvious. A piece of this soft tissue was taken for the preparation and examination of sections, and an area of the bone involved was removed for the same purpose. This bone was moderately hard, and in no way resembled the material usually found in Ewing's tumour. The invasion of the soft tissue was also more suggestive of an osteogenic sarcoma than of Ewing's tumour.

The pathologist's report received on May 15 (Figure I) was as follows:

> A characteristic feature of all sections is the presence of sheets of cells which resemble reticulum cells. The cells are large, vary in size and contain hyperchromatic nuclei. Mitoses are not infrequent. There is also some extension between the skeletal muscle fibres. The appearances suggest Ewing's sarcoma.

Since operative treatment would have required a very radical procedure, and the possibility existed that the tumour was radiosensitive, it was decided to ask Dr. F. Duval to undertake treatment. This he did, despite his opinion that the ultimate prognosis was poor.

During the period of irradiation there was obvious increase of bone involvement, and a soft-tissue swelling appeared in the region of the great trochanter and adjacent muscle. The involvement of the *gluteus minimus* was obvious in the X-ray picture (Figure III). For this reason, after consultation with Sir Hugh Poate, it was decided to perform hindquarter amputation. The implications of this were discussed with the patient, and after a short delay due to his marriage, the operation was performed on July 28, 1949.

At operation, it was found that the tumour had invaded the *gluteus minimus* muscle from its insertion into the great trochanter up to the sciatic notch, through which an extension was found invading the pelvic cavity. This made the dissection of the structures in this vicinity rather difficult. The pathologist reported that examination of the soft tissue revealed areas of necrosis, fibrosis, and collections of inflammatory cells, including numerous foam cells. In the bone there was much necrosis, but viable tumour tissue was greatly in evidence.

The post-operative recovery and convalescence of the patient were uneventful, and he was soon able to move about on crutches. He had at first some discomfort on sitting, but this was rectified by the provision of a "false buttock" attached to a pelvic belt.

Physical and X-ray examinations in March, 1957, failed to reveal any evidence of recurrence. The patient still occupies a position as a clerk at a good salary, and states unhesitatingly that the operation has been worth while. He enjoys married life to the full. He wears a prosthesis and drives his own motor-car.

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There are many features in this case suggestive of reticulum cell sarcoma. In half these cases either the tibia or the femur is involved. The tumour occurs in early adult life. There are no characteristic X-ray appearances, many lesions being simulated. The lamination of Ewing's sarcoma has been seen on occasions. The osteclytic process, which usually involves the end of a long bone, may simulate a metastasis. The good prognosis in this case may be attributed by some to the tumour's being of this nature. However, these tumours are usually radiosensitive, so that this diagnosis is also unproved. Again, the site of the tumour and the age of the patient are consistent with the diagnosis of osteogenic sarcoma, as is its resistance to radiotherapy. Sir Stanford Cade considered that the radioresistance of the tumour established almost completely the diagnosis of osteogenic sarcoma. It is admitted that the periosteal reaction and the nature of the spread in the soft tissues, together with the good result, are not in favour of this diagnosis.

Acknowledgement.

I should like to thank the chairman of the Repatriation Commission for allowing publication of this case.

Legends to Illustrations.

FIGURE I.—Section of osteogenic sarcoma of the femur (×100).

FIGURE II.—X-ray picture of osteogenic sarcoma of the femur.

FIGURE III.—X-ray picture of right hip, showing involvement of *gluteus minimus* muscle.

INSULIN RESISTANCE IN SCHIZOPHRENIA.

By JOHN COLLINS, M.B., B.S., D.P.M.,
Northfield Mental Hospital, Northfield, South Australia.

THE phenomenon of insulin resistance in schizophrenia is little understood, and it is well known that patients may go into coma on dosages as low as 40 units, while other patients are resistant to doses up to 1000 units or even more (Sargant and Slater, 1954). As a patient was found who was apparently completely resistant to 1600 units of insulin given intramuscularly, it was thought worth while to compare blood sugar readings following this enormous dose and those produced in a "typical" patient having regular one-hour comas. In this hospital the insulin is given at 7 a.m., the patient having fasted from 9 p.m. on the previous day. As far as possible it is arranged that patients go into coma at about the third hour. They are interrupted after one hour of coma or four hours after the insulin has been given, whichever comes first. Coma is defined as a state of unconsciousness in which all purposive responses to sensory stimuli are lost. Cortical function is practically abolished, although reflex and global reactions to strong stimulation such as pain may be present. The amount of insulin required to produce the necessary degree of hypoglycæmia varies considerably from patient to patient, but is usually related to the sex and to the body weight. It is found empirically for each patient by gradually increasing the dosage during the first weeks of treatment. Along with the abolition of cortical function there are disturbances of the autonomic nervous system. Usually throughout hypoglycæmia both sympathetic and parasympathetic mechanisms can be seen, often alternating. The autonomic changes are considered by some workers to be the agents of cure. However, there still still appears to be little rationale in insulin treatment.

Clinical Records.

In Case I the patient was a male paranoid schizophrenic, aged thirty-four years, having regular comas on doses of 240 units of insulin. In Case II the patient was a male simple schizophrenic, aged twenty-seven years. Both patients were of approximately the same physique. A maximum intramuscular dosage of 1600 units of insulin not only failed to produce coma in Case II, but caused no noticeable physiological change. It did not even make the patient sweat, although he did become very irritable and thought blocking was evident during treatment. He also received up to 500 units of insulin intravenously. Insulin is not normally used intravenously in insulin coma therapy, as the intravenous has little advantage over the intramuscular route except economy in the amounts of insulin and sugar used (McGregor and Sanderson, 1940). The intravenous administration of insulin produced a sharp rise of temperature to 103° F., but no other apparent change. This rise of temperature was probably due to simple protein shock.

At the 1000 unit mark, swinging the dose between 500 and 1000 units was unsuccessful. The administration of stilbœstrol as a method of reducing resistance was not used. It was decided not to go beyond 1600 units or to swing the dose at this level, as the largest dose I had seen recorded in the literature had been followed on subsequent days by these doses: 50, 100, 200, 400, 800, 1600, 1600, 2000 and 500 units. Coma was induced by 2000 units, but when the dose was dropped to 500 units the next day the patient went into a fatal irreversible coma (Schefien *et alii*, 1952).

The patient's fasting blood sugar levels were estimated immediately prior to the administration of insulin, and then hourly till interruption. In Case I the treatment was interrupted with 240 grammes of sugar solution given by gavage, and in Case II with 300 grammes given orally. Blood sugar readings were then taken at 1 p.m., 3 p.m., 6 p.m., 9 p.m. and 3 a.m. The patients had lunch just after the 1 p.m. reading, tea at 5 p.m., and supper after the 9 p.m. reading.

The results are shown in Tables I, II and III, and graphically in Figure I. From the graph a number of interesting observations can be made. In case I the blood sugar level fell rapidly to 23 milligrammes per 100 millilitres and stayed approximately at this level till the interruption of treatment. Although the blood sugar level was down to about the minimum within one hour, coma did not ensue till approximately the third hour. This illustrates the futility of attempting to use blood sugar estimations as an index of the depth of coma. There is no direct and straight-line correlation between the various stages of reduction or suspension of brain activity and the mere reduction of blood sugar level (Alexander, 1953). Possibly it is not till the cerebro-spinal fluid sugar level falls that the coma occurs (Loman, 1952). On interruption of treatment the blood sugar level rose in two hours to 167 milligrammes per 100 millilitres, and it was back within normal limits in four hours. This is approximately the sort of result one would expect from a glucose tolerance test, although the hyperglycæmia is more prolonged in this case.

In Case II also the blood sugar fell to its minimum level at the end of the first hour and then remained at this level till the interruption of therapy. However, at no stage did a fall occur below 56 milligrammes per 100 millilitres, or approximately 20 milligrammes per 100 millilitres below the fasting level. The rebound was very much greater and more sustained; the reading was 285 milligrammes per 100 millilitres two hours after interruption, and two hours later it was even higher at 320 milligrammes per 100 millilitres. (Of course, the patient had lunch between these two readings.) Three hours later the reading was 168 milligrammes per 100 millilitres. A similar response was observed after the intravenous administration of

a further X-ray examination revealed a longitudinal fracture in the gauze (Figure IV). However, there was no evidence of paradoxical respiration, and only a small bulge over the defect on coughing.

Sixteen months after her operation the patient underwent cholecystectomy and choledochostomy for cholelithiasis and presented no anæsthetic difficulties. She remains well, swims, runs, and does all her housework. The fracture in the tantalum gauze has not widened.

Summary.

1. Closure of chest wall defects with tantalum gauze and recently with polyvinyl formalinized ("Ivalon") sponge is adequate to prevent complications such as paradoxical respiration and lung herniation.

2. A case is presented of successful closure of a chest wall defect with tantalum gauze, after the wide removal of three ribs for a fibroma of a rib.

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Legends to Illustrations.

FIGURE II.—Lateral view of the chest with tantalum mesh gauze in position.

FIGURE III.—Antero-posterior view of the chest, with tantalum mesh gauze in position.

FIGURE IV.—Showing the presence of fractures in the tantalum mesh gauze.

HINDQUARTER AMPUTATION FOR SARCOMA OF THE FEMUR.

By NORMAN WYNDHAM,
Sydney.

FROM the patient's point of view, radical operations for carcinoma are not infrequently of doubtful value. Questions of philosophy rather than pathology must often determine treatment. Yet when such operations, even mutilating ones, are indicated, they must be carried out with thoroughness and determination. Unless a growth can be removed completely, it is better left alone or treated by irradiation.

In the case reported here, eight years after operation, the patient is happy and well, very active, in full employment and the father of a family.

Clinical Record.

The patient, aged twenty-four years, was examined on May 1, 1949. For the past three years he had complained of pain in the right hip, occurring about once a week. This was of minor character until six weeks before his examination, when it became constant and knife-like. It was situated on the lateral aspect of the right hip, and radiated down the outside of the thigh and calf. It was present equally day and night, but was not aggravated by walking. He had lost one and a half stone in weight in two months. However, he had no other symptoms or complaints. An X-ray examination was carried out on May 7 and the report was as follows (Figure II):

> There is an area of osteoporosis in the greater trochanter. This extends medially into the sub-capital area superiorly, and slightly downwards into the shaft. Over the lesion, several layers of periosteal new bone are seen, more especially on the distal part close to the shaft. In one area the periosteal new bone appears to have been perforated. There are three possibilities:
>
> (1) Tuberculosis or simple osteomyelitis.
>
> (2) Gumma.
>
> (3) New growth. This may also include a reticulosis.

At operation on May 12, an incision was made over the great trochanter. Invasion of muscle and fascia by tumour growth was obvious. A piece of this soft tissue was taken for the preparation and examination of sections, and an area of the bone involved was removed for the same purpose. This bone was moderately hard, and in no way resembled the material usually found in Ewing's tumour. The invasion of the soft tissue was also more suggestive of an osteogenic sarcoma than of Ewing's tumour.

The pathologist's report received on May 15 (Figure I) was as follows:

> A characteristic feature of all sections is the presence of sheets of cells which resemble reticulum cells. The cells are large, vary in size and contain hyperchromatic nuclei. Mitoses are not infrequent. There is also some extension between the skeletal muscle fibres. The appearances suggest Ewing's sarcoma.

Since operative treatment would have required a very radical procedure, and the possibility existed that the tumour was radiosensitive, it was decided to ask Dr. F. Duval to undertake treatment. This he did, despite his opinion that the ultimate prognosis was poor.

During the period of irradiation there was obvious increase of bone involvement, and a soft-tissue swelling appeared in the region of the great trochanter and adjacent muscle. The involvement of the *gluteus minimus* was obvious in the X-ray picture (Figure III). For this reason, after consultation with Sir Hugh Poate, it was decided to perform hindquarter amputation. The implications of this were discussed with the patient, and after a short delay due to his marriage, the operation was performed on July 28, 1949.

At operation, it was found that the tumour had invaded the *gluteus minimus* muscle from its insertion into the great trochanter up to the sciatic notch, through which an extension was found invading the pelvic cavity. This made the dissection of the structures in this vicinity rather difficult. The pathologist reported that examination of the soft tissue revealed areas of necrosis, fibrosis, and collections of inflammatory cells, including numerous foam cells. In the bone there was much necrosis, but viable tumour tissue was greatly in evidence.

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The patient's fasting blood sugar levels were estimated immediately prior to the administration of insulin, and then hourly till interruption. In Case I the treatment was interrupted with 240 grammes of sugar solution given by gavage, and in Case II with 300 grammes given orally. Blood sugar readings were then taken at 1 p.m., 3 p.m., 6 p.m., 9 p.m. and 3 a.m. The patients had lunch just after the 1 p.m. reading, tea at 5 p.m., and supper after the 9 p.m. reading.

The results are shown in Tables I, II and III, and graphically in Figure I. From the graph a number of interesting observations can be made. In case I the blood sugar level fell rapidly to 23 milligrammes per 100 millilitres and stayed approximately at this level till the interruption of treatment. Although the blood sugar level was down to about the minimum within one hour, coma did not ensue till approximately the third hour. This illustrates the futility of attempting to use blood sugar estimations as an index of the depth of coma. There is no direct and straight-line correlation between the various stages of reduction or suspension of brain activity and the mere reduction of blood sugar level (Alexander, 1953). Possibly it is not till the cerebro-spinal fluid sugar level falls that the coma occurs (Loman, 1952). On interruption of treatment the blood sugar level rose in two hours to 167 milligrammes per 100 millilitres, and it was back within normal limits in four hours. This is approximately the sort of result one would expect from a glucose tolerance test, although the hyperglycæmia is more prolonged in this case.

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insulin. Although the blood sugar level fell lower, there was again no suggestion of a coma.

Discussion.

Glucose diffuses freely through capillary endothelium and cell membranes, and is therefore fairly evenly distributed throughout both intracellular and extracellular fluids. The blood sugar level is an approximate guide to the concentration of glucose in the body fluids. Laboratory tests for blood sugar contents are really tests of the reducing power of that fluid, but are sufficiently accurate for the purpose of this paper. The Folin-Wu method of estimation of the blood sugar level was used. In this method a basal level of about nine milligrammes per 100 millilitres is due to other reducing substances in the blood.

TABLE I.

Case I: Response to 240 Units of Insulin Given Intramuscularly.

Time.	Fasting Blood Sugar Level. (Milligrammes per 100 Millilitres.)
7 a.m.	89
240 units of standard insulin given intramuscularly.	
8 a.m.	23
9 a.m.	22
10 a.m.	20
11 a.m.	29
Interruption: 240 grammes of sugar given by gavage.	
1 p.m.	167
Lunch.	
3 p.m.	91
Tea.	
5 p.m.	—
6 p.m.	78
9 p.m.	84
Supper.	
3 a.m.	86

Insulin increases the withdrawal of glucose from body fluids by increasing the deposition of glycogen in liver and muscles, by increasing the rate of complete oxidation of glucose to carbon dioxide in the tissues, and by increasing the rate of conversion of glucose into fatty acids. It decreases the rate of addition of glucose by depressing new glucose formation from the non-nitrogenous residues of amino acids, and possibly depresses the rate of conversion of liver glycogen into glucose.

Normally man is not in need of additional insulin, so that the result of an insulin injection is pathological hyperinsulinæmia. This rapidly produces hypoglycæmia. As the circulating glucose in the blood is the sole source of energy of the brain, a fall in blood sugar level deranges cerebral activity. However, compensatory mechanisms occur to overcome the hypoglycæmia. The effect of the insulin is the resultant of these compensatory mechanisms and the direct effect of insulin. These compensatory mechanisms are mainly as follows: (i) Increased sympathetic activity and increased secretion of adrenaline accelerate the conversion of liver glycogen to glucose. (ii) The hypothalamus is stimulated; this causes increased secretion of hormones which antagonize the action of insulin on the liver and tissues.

In Case II there were no signs of sympathetic overactivity; the insulin appeared to produce no effect at all on the patient, not even sweating. It therefore appears that the compensatory mechanism in his case must have been other than the first of the two mentioned above. The factor keeping the patient's blood sugar level up must have been very potent, as 1600 units of insulin is an enormous dosage and in most cases would probably be lethal. This factor also produced an extremely high and prolonged elevation of the blood sugar level after interruption of treatment. The mechanism of blood sugar maintenance is rather complicated, and it has been found that in man, after total pancreatectomy, the insulin requirements are

TABLE II.

Case II (i): Response to 1600 Units of Insulin Given Intramuscularly.

Time.	Fasting Blood Sugar Level. (Milligrammes per 100 Millilitres.)
7 a.m.	78
1600 units of standard insulin given intramuscularly.	
8 a.m.	56
9 a.m.	58
10 a.m.	60
11 a.m.	58
Interruption: 300 grammes of sugar given orally.	
1 p.m.	285
Lunch.	
3 p.m.	320
Tea.	
5 p.m.	—
6 p.m.	168
9 p.m.	91
Supper.	
3 a.m.	69

TABLE III.

Case II (ii): Response to 500 Units of Insulin Given Intravenously.

Time.	Fasting Blood Sugar Level. (Milligrammes per 100 Millilitres.)
7 a.m.	76
500 units of insulin given intravenously.	
8 a.m.	51
9 a.m.	48
10 a.m.	50
Interruption: 200 grammes of sugar given by mouth.	
12 noon	228

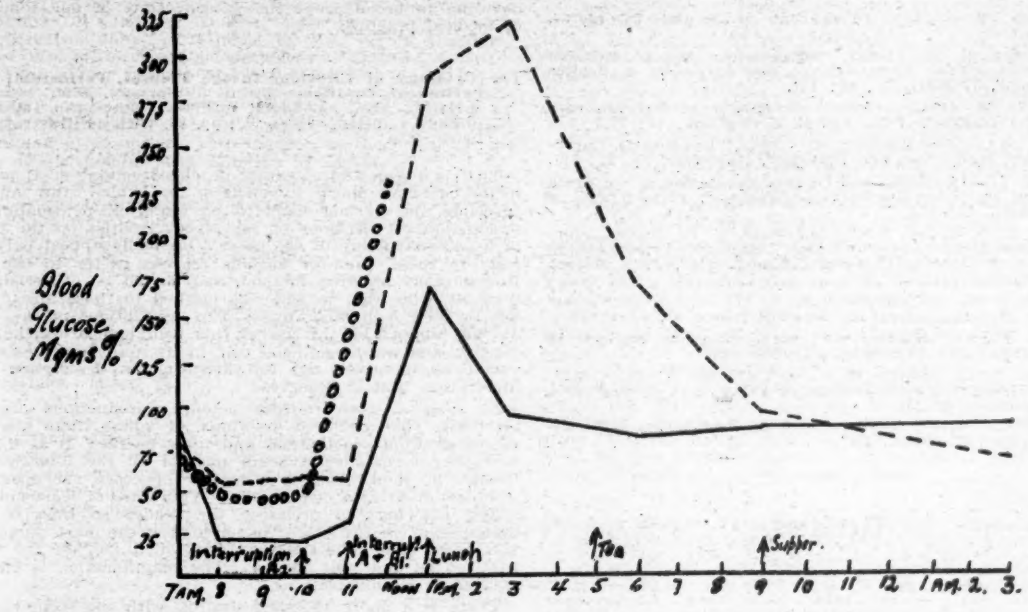

FIGURE I.

Blood sugar levels in Case I, and in Case II on two occasions. Solid line, Case I: 240 units of insulin given intramuscularly at 7 a.m.; treatment interrupted with 240 grammes of sugar given by gavage. Interrupted line, Case II, first occasion: 1600 units of insulin given intramuscularly at 7 a.m.; treatment interrupted with 300 grammes of sugar given orally. Circles, Case II, second occasion: 500 units of insulin given intravenously at 7 a.m.; treatment interrupted with 200 grammes of sugar given orally.

less than in some cases of *diabetes mellitus*. Comparatively recently a blood glucose raising factor (called hyperglycæmic factor) has been isolated from impure insulin and from the islets. Although the phenomenon of insulin resistance is poorly understood, the possible causes are as follows: (i) Poor absorption of insulin from subcutaneous tissues. However, this patient responded in an almost identical fashion to the intravenous administration of insulin. (ii) An abnormal condition of the liver. There was no evidence of liver disease or dysfunction in this patient. (iii) Rapid destruction of insulin. There was no evidence for this. (iv) Over-activity of the insulin antagonists—that is, the anterior pituitary, adrenal cortical, thyroid and pancreatic hyperglycæmic factors. Perhaps it may be postulated that in this case the anterior pituitary cortical diabetogenic factor was unusually potent.

The relationship of the anterior lobe of the pituitary to the diabetic syndrome is complicated and confused. It was first demonstrated by Houssay and Potick, and has been confirmed adequately since, that treatment with anterior pituitary lobe extracts can induce in either normal or hypophysectomized animals an insensitivity to the action of insulin. The action of the diabetogenic factor is thought to be the opposite of that of insulin. Normally the action of the diabetogenic factor and of insulin on the liver and tissues is balanced:

$$\text{Glycogens in liver} \underset{\text{Insulin}}{\overset{\text{Anterior pituitary}}{\rightleftharpoons}} \text{Glucose in blood.}$$

$$\text{Glucose in tissues} \xrightarrow[\text{Anterior pituitary inhibits}]{\text{Insulin stimulates}} \text{Hexose phosphate.}$$

Although it seems certain that the diabetogenic factor is concerned in the normal regulation of carbohydrate metabolism, it is possible that different mechanisms are called into play during the injection of a large dose of insulin. A separate factor has been extracted from the anterior lobe of the pituitary, which has no direct action on the blood sugar level, but decreases the blood sugar lowering action of insulin. This and the hyperglycæmic factor of the pancreas may be of significance in this case (Young, 1936). Meduna and his co-workers have stated that the blood of 60% of the schizophrenic patients they tested had an antagonistic effect on the action of insulin. These experiments were performed on rabbits. They considered this 60% to be "typical" schizophrenics, whereas those patients in whom no such increase in anti-insulin factor was found were said to present atypical features. These findings have since been criticized (Harris, 1942). Evidence on the relationship of sex hormones and insulin (Houssay) suggests that œstrogens have a "sensitizing" and androgens a "desensitizing" effect. Certainly it appears that males in general require a higher dose (Freudenberg, 1952).

Summary.

1 A case of apparently total resistance to 1600 units of intramuscular insulin is presented.

2. The blood sugar values in this case and in another "typical" case are shown during the treatment phase and after interruption.

3. In the resistant case it is noted that the blood sugar level at no stage fell below 56 milligrammes per 100 millilitres, and after interruption of therapy a pronounced and persistent hyperglycæmia was evident.

4. In the "typical" case the blood sugar level was down to its minimum level for about two hours before coma occurred.

5. Possible factors responsible for the failure to induce coma are discussed.

Acknowledgements.

I should like to thank Dr. H. M. Birch, Superintendent of Mental Institutions, South Australia, and Dr. W. M. Salter, Deputy Superintendent, Northfield Mental Hospital, for advice, and for permission to publish this paper.

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Reviews.

Practical Dermatology. By S. M. Peck, B.S., M.B., and L. L. Palitz, M.D., Ph.D.; 1956. New York: Landsberger Medical Books, Incorporated. Distributed solely by The Blakiston Division of the McGraw-Hill Book Company. 8″ × 5¾″, pp. 382, with 122 illustrations. Price: $7.00.

THIS book of 349 pages of text with 122 black and white illustrations is written for the general practitioner.

It is refreshing to read a text which adheres to its aim being practical in treatment and dealing with the common diseases of the skin; it mentions some of the not so common as well, but is not a minor tome of dermatology, which many other texts with the same stated aim tend to be.

The print is large, and the subject matter is concisely and interestingly put without mention of unnecessary detail. Above all, the treatment as outlined is simple, common-sense and practical.

We have no hesitation in recommending this book. It could easily find a place on the shelf of every practitioner. It can be read by both general practitioner and specialist with gain to both, in the space of time required to read a detective novel.

The Practice of Medicine. By Jonathan Campbell Meakins, C.B.E., M.D., LL.D., D.Sc.; Sixth Edition; 1956. St. Louis: The C. V. Mosby Company. Melbourne: W. Ramsay (Surgical), Limited. 10″ × 6¾″, pp. 1916, with 318 illustrations, including four in colour. Price: £8 16s.

THE first edition of Meakins's "Practice of Medicine" appeared in 1936. It was largely written by Professor Meakins himself, a few chapters being contributed by colleagues. Even the fifth edition in 1950 retained the features of unified authorship. In the present edition, the editorial staff has been expanded to include 24 associate editors. Each has been allotted a section with the responsibility of selection of suitable contributors, who number 88. Unity of policy has been achieved by close liaison between editor and associates, while the quality of the individual sections has been maintained at a high standard by the close collaboration of associate editors and contributors. The choice of the team reflects the intimate relationship between medical men of Canada and of the United States.

Individual chapters are concisely written, up to date and informative. There is a short bibliography at the end of each section. One might criticize the lack of illustrations and diagrams in some sections. Any attempt to systematize medicine must present difficulties, resulting in either omissions or overlapping. Some overlap occurs, for example, in the separation of the description of the metabolic basis of gout from the manifestations of gouty arthritis. In neither section is a satisfactory description given of the whole course of the disease.

The general impression is that of a well-integrated production, admirably fitted to fill the purpose for which it is designed—that of a text-book for students and practitioners covering in broad scope the present state of our concepts of medical practice.

The Cytology of Effusions in the Pleural, Pericardial and Peritoneal Cavities. By A. I. Spriggs, D.M. (Oxon.), M.R.C.P.; 1957. London: William Heinemann (Medical Books), Limited. 9½″ × 7½″, pp. 80, with 40 illustrations. Price: 42s.

THIS is a slim and elegantly produced volume of 31 pages, including two short appendices, in which the author describes the various cells to be found in non-malignant and malignant effusions of the serous cavities on the basis of a personal study of 636 cases. It should appeal particularly to those who for various reasons prefer to use the Romanowsky staining method, and should be of assistance to those who wish to add this method to those already in use in their own laboratory. The descriptions of the cells as they appear by the use of this technique are clear and concise, and the mesothelial cell, in its many morphological variations, is given the full attention in description and illustration that it deserves.

In such a work faithful colour reproductions are an essential. The coloured drawings, of which there are five plates, are quite delightful and most useful. It is a pity that they form such a small part of all the illustrations, though no doubt this is a matter of cost; nor does the work claim to be a coloun atlas. There are at least enough colour drawings to orientate the reader so that, in his imagination, he can colour in for himself the more numerous black and white photomicrographs which are, for the most part, sharp and well chosen. The magnification is clearly evident in all illustrations.

There is a short appendix dealing with the technique of making smears from effusions, which may seem rather unnecessary to the experienced pathologist; but, as the author maintains, the examination of serous effusions tends only too often to be cursory or based on poor technical preparations, and this little book should perform the useful function of encouraging a more serious approach to what can often prove a quite rewarding diagnostic procedure.

Textbook of Medicine. By various authors, edited by Sir John Conybeare, K.B.E., M.C., D.M. (Oxon.), F.R.C.P., and W. N. Mann, M.D. (Lond.), F.R.C.P.; Twelfth Edition; 1957. Edinburgh and London: E. and S. Livingstone, Limited. 9¼″ × 6½″, pp. 877, with 39 illustrations. Price: 42s.

IT is a pleasant task to review the twelfth edition of that hardy perennial "Conybeare", whose editors conscientiously endeavour to keep pace with the rapid advance of medicine, yet contrive to confine their work within the space of a text not too forbidding to the medical student for whom it is primarily intended. To help them with their task they have enlisted the aid of at least six new contributors, whose revisions maintain the high standard set by their predecessors. Minor defects noted in our review of the previous edition have been eliminated, and the quality of the X-ray plates has been improved.

By this edition "Conybeare" maintains its position as one of the best text-books for the medical student, as well as providing an excellent basis for post-graduate work.

Ciba Foundation Colloquia on Ageing: Volume 3: Methodology of the Study of Ageing. Edited by G. E. W. Wolstenholme, O.B.E., M.A., M.B., B.Ch., and Cecilia M. O'Connor, B.Sc.; 1957. London: J. and A. Churchill, Limited. 8″ × 5¼″, pp. 214, with 47 illustrations. Price: 32s. 6d.

IN 1954 the Trustees of the Ciba Foundation decided to organize several conferences or colloquia on the problems of aging. Two, already published, were on "General Aspects of Ageing" and "Ageing in Transient Tissues". A third has just appeared on "Methodology of the Study of Ageing".

For the colloquium 28 persons interested in the study of aging from various parts of Europe and America met in London in July, 1956. Twelve papers were given, and there was a discussion on each paper and a final general discussion. The idea of methodology was interpreted very widely, and the result was a series of papers and discussions of outstanding excellence.

The subjects of the papers were as follows: "The Biological Approach in the Comparative Study of Ageing"; "The Comparative Biology of Ageing: A Physiological Approach"; "The

Study of the Ageing of Cells"; "Examples of Reaction to Standard Stimuli at Different Ages"; "Studies on Adaptation as a Method of Gerontological Research"; "Methods and Limitations in Study of Human Organ System Function"; "Comparative Value of Studies of the Whole Organism and of Whole Tissue: Clinicopathological Tests of Ageing"; "Nutrition, Liver Disease and Some Aspects of Ageing in Africans"; "The Use of Inbred Strains of Animals in Experimental Gerontology"; "Twin Data on the Genetics of Ageing" "Methodological Problems in the Study of Changes in Human Performance with Age"; "Methodology of the Study of Intelligence and Emotion in Ageing".

It will be seen that the ground covered is very extensive. The discussions were particularly good. Any medical man or biologist who is interested in the process of aging, and who is not excepting the very young, must find in this book a great deal that is worth studying.

History of the School of Tropical Medicine in London, 1899-1949: London School of Hygiene and Tropical Medicine, Memoir No. 11. By Sir Phillip Manson-Bahr, C.M.G., D.S.O., M.D., F.R.C.P.; 1956. London: H. K. Lewis and Company, Limited. 9¾" × 7¼", pp. 343, with 31 illustrations. Price: £2 10s.

IT is unlikely that anybody could possess a more intimate acquaintance with the London School of Tropical Medicine and Hygiene than Sir Phillip Manson-Bahr, who has written a most comprehensive history of the school. His history is, to all intents and purposes, a history of modern tropical medicine, since the work of the school has always been linked with that of workers in other countries, and the school's workers have always been in the forefront of research in tropical medicine.

The history opens with a discussion of the status of tropical medicine in the 1880's, and goes on to describe the events leading to the formation of the school at the Branch Hospital of the Seamen's Hospital Society near the Albert Docks. It was opened for students in 1899. Then the progress of the school is followed till 1949.

The greater part of the book, however, is devoted to each of the founders, physicians, surgeons, lecturers, deans and all the specialists who have served on its staff. The pages glow with well-known names, and the men are written about with personal knowledge and appreciation, for Sir Phillip knew them all, and worked with them. This personal touch gives the history a distinct and unusual charm.

Finally, the diary of the school's achievement, year by year, and the record of its many research expeditions, round off the history with a rapid survey of the great work done. The whole is a most readable and fascinating history, excellently produced.

Cytologic Technics for Office and Clinic. By H. E. Nieburgs, M.D.; 1956. New York and London: Grune and Stratton. 9" × 6", pp. 243, with 171 illustrations. Price: $7.75.

IN this little book H. E. Nieburgs describes the collection from various parts of the body of cells for the diagnosis of cancer. Photomicrographs of cells from various regions are included; but the author emphasizes the fact that his book is concerned primarily with the collection of specimens for examination; "for the diagnostic phase of cytology the reader is referred to publications cited throughout the book". The author's principal thesis is "abrasive versus exfoliative cytology". He states that "the cells collected by abrasive methods apparently retain their identity much better than exfoliated cells and can be easily recognized and compared with cells in the epithelial structure of tissue sections". The book is illustrated most copiously with line drawings showing the scraping by spatulas of accessible mucous membranes, and the abrading of the remoter areas by retractable nylon brushes housed in rubber tubes. The question whether any harm might be done by nylon brushes is not raised. The organization of a "cytologic laboratory" is described in great detail, with descriptions for mailing, pictures of filing cabinets, microscopes, technicians at work and so on. This highly specialized and technical book may be useful for reference.

Lecture Notes on the Use of the Microscope. By R. Barer, M.C., M.A., B.Sc., M.B., B.S.; Second Edition; 1956. Oxford: Blackwell Scientific Publications. 7¼" × 5", pp. 83, with tables and illustrations. Price: 7s. 6d.

THE need for a second edition of this little book after only three years proves its great usefulness. As the author writes in his preface to the first edition, probably no instrument is more often misused than the microscope. The average medical or biological student rarely receives any serious teaching about the microscope, and his use of it is, at the best, timid and amateurish, and at the worst, criminally slapdash. Dr. Barer's book is intended as a basic elementary text, and within this limited form he has aimed at, and almost achieved, perfection. In the preface to the first edition he writes:

> Every possible care has been taken to make the practical instructions as clear and fool-proof as possible and these sections have been re-written several times. They were first tried out on people with no scientific training whatsoever, most of whom literally did not know one end of a microscope from the other.

Next, pupils from the upper forms of two schools were used as guinea-pigs, then classes of medical students, and finally the manuscript was read by several biological and physical colleagues. This is essentially a practical book, to be used with microscopes of the types commonly used by students. A description of the microscope stand and its components is followed by two admirably clear chapters on "How the Image is Formed" and "The Theory of the Microscope". A list of books for further reading is given, and there are two appendices, one dealing with some instructive experiments on the use of the microscope, the other with the use of research type microscope lamps. A book of this type should be read by every medical and biological student.

The Year Book of Pathology and Clinical Pathology (1956-1957 Year Book Series). Edited by William B. Wartman, B.S., M.D.; 1957. Chicago: The Year Book Publishers, Incorporated. 7¼" × 5", pp. 510, with 158 illustrations. Price: $7.00.

THE 1956-1957 "Year Book of Pathology and Clinical Pathology" is edited, as in previous years, by William B. Wartman, who has an engaging habit of taking his readers into his confidence. This year he presents in his introduction a short analysis of the types of journals which have furnished his material and of their countries of origin. Australasia is represented by five journals. The introduction is followed by the customary special article in lighter vein, this time reprinted from *The Lancet*, and dealing with the highly technical subject of the classification of unicorns. The section on general pathology opens with a series of papers on radiation effects. The first paper, entitled "Genetic Effects of Atomic Radiation", is reprinted from *Science* (June 19, 1956), and is the major portion of the summary report of the Committee on Genetic Effects of Atomic Radiation, National Academy of Sciences, National Research Council. This and the succeeding papers could profitably be read by all doctors, since the matter is one of vital importance and a proper perspective is needed at the present time.

For the rest, the other sections of this Year Book cover broadly the same subjects as before, with the rearrangements, omissions and additions that normally occur from year to year. We find it not only scientifically helpful, but interesting and stimulating.

Sodium-Restricted Diets and the Sodium Content of Foods. Prepared by the Nutrition Section, Commonwealth Department of Health, Canberra; 1956. Canberra: The Australian Institute of Anatomy, Commonwealth Department of Health. 9¾" × 5¾", pp. 40, with tables. Price: Free for the medical and nursing professions.

THIS informative booklet on "Sodium Restricted Diets and the Sodium Content of Foods", which was prepared by the Nutrition Section of the Commonwealth Department of Health, will be of great aid to the general practitioner in advising suitable diets for patients suffering from various disorders such as hypertension, cardiac failure, renal diseases, toxæmia in pregnancy and cirrhosis of the liver with ascites, and in conjunction with cortisone and ACTH therapy.

The first sections provide information on the sources and amounts of sodium occurring naturally in the different foods and in water supplies. Then there follow lists of (*a*) foods low in sodium content, (*b*) foods moderate in sodium content and (*c*) foods high in sodium content. A comprehensive plan has been set out for patients in whom sodium restricted diets are essential. This provides for the inclusion of important nutrients such as calcium, protein, iron, riboflavin and other vitamins which might otherwise be omitted from a low sodium content diet when milk, eggs

and meat are severely restricted or excluded altogether. The level of sodium restriction may be adjusted to suit individual patients; in addition, amounts of sodium permissible, in diets which are low in sodium content and low in caloric content, are given to suit patients with hypertension when weight reduction is indicated. The last sections give tables of standard sodium-restricted diets, food lists, meal plans, sample menus, ideas on food preparation and several recipes.

Altogether this booklet will be very useful to the physician as a guide, and also to patients suffering from the disorders listed, to assist them in the preparation of a balanced and varied diet where restriction of sodium content is desirable.

The Year Book of Urology (1956-1957 Year Book Series). Edited by William Wallace Scott, M.D., Ph.D.; 1957. Chicago: The Year Book Publishers, Incorporated. 7½" × 5", pp. 384, with 87 illustrations. Price: $6.75.

THE 1956-1957 "Year Book of Urology" is edited, as before, by William Wallace Scott, of the Johns Hopkins Hospital and the Johns Hopkins University School of Medicine. The journals abstracted in it have been received between November, 1955, and October, 1956. The introductory article by the editor is entitled "Studies on the Prostate", and is a brief résumé of the researches on the subject carried out in his laboratory; all urologists could read this with profit. For the rest, a number of new subjects have been introduced into the table of contents. This year book maintains the high standard set for the whole of the "Year Book" series; it will be an invaluable reference book for urologists seeking to have up-to-date information readily at hand.

Notes on Books.

Family Doctor. Published monthly by the proprietors, the British Medical Association, Tavistock Square, London, E.C.1. Sole agents for Australia and New Zealand: Gordon and Gotch (Australia), Limited. Subscription for twelve months: 20s. (sterling), including postage.

"FAMILY DOCTOR" maintains its customary high standard. Indeed, the issue for July, 1957, is exceptionally interesting; it contains a wealth of reliable and sensible information on current medical matters. The editorial on "Broadcasting Pill" gives the facts about the new gadget which has been developed to provide, by means of radio signals, information about the changing gas pressures it meets in the stomach, the small intestine and the large intestine, as it proceeds on its alimentary journey. "Taking an Inside View" is a reassuring article describing what takes place during an X-ray examination. A particularly helpful paper deals with ways in which the school-leavers can be gently guided into choosing the right career. Parents of mongol children would derive considerable comfort and assistance from reading of the experiences of other parents who have coped satisfactorily with the problems involved. The "Under Five Forum" continues on its happy way. We have nothing but praise for this popular journal, which can be confidently recommended by any doctor to his patients.

Doctor on the Dole. By Michael Johnn; 1957. London: Christopher Johnson. 8¼" × 5½", pp. 200. Price: 15s.

FOR most Australians, the interesting part of this book will be the section in which the author describes his experiences in Australia, and they will get a good deal of fun out of identifying the more or less thinly disguised places and people he describes. The book ranges lightly over the whole of the author's life from his childhood and his medical student days in Dublin, his later experiences in hospital and practice in England, his excursions into politics, and his period of medical practice in Australia, to his unhappy encounter with the National Health Service on his return to England at the age of fifty-two. The difficulties he then experienced in breaking through the red tape surrounding practice in England provide the title for the book. Michael Johnn seems to have been rather a rolling stone, and some people will probably find him irritating at times, but his book provides racy entertainment and food for thought.

Books Received.

[The mention of a book in this column does not imply that no review will appear in a subsequent issue.]

"Introduction to Clinical Endocrinology", by A. Stuart Mason, M.A., M.D., B.Ch. (Cantab.), M.R.C.S. (Eng.), M.R.C.P. (Lond.); 1957. Oxford: Blackwell Scientific Publications. 8¾" × 5½", pp. 200. Price: 22s. 6d. (English).

Primarily for the senior student and recently qualified doctor, this book is designed to provide a concise account of endocrine diseases set in the perspective of general medicine.

"The Care of the Elderly Sick in General Practice", being the John Matheson Shaw Lecture for the year 1956 delivered in the hall of the Royal College of Physicians of Edinburgh on November 9 by W. Ferguson Anderson, M.D., F.R.F.P.S. (Glasg.), M.R.C.P. (Lond.); 1957. Edinburgh: The Royal College of Physicians. 8¼" × 5½", pp. 28. No price stated.

The lecturer is Adviser to the Western Regional Hospital Board (Scotland) in Diseases of Old Age and Chronic Sickness.

"Extensile Exposure", by Arnold K. Henry, M.B., Dublin, M.Ch. (Hon.), Trinity College, Dublin, and Cairo, F.R.C.S.I., Chevalier de la Légion d'Honneur; Second Edition; 1957. Edinburgh and London: E. and S. Livingstone, Limited. 9¾" × 6¾", pp. 332, with 198 illustrations. Price: 45s. (English).

A discussion of methods of approach in surgical operations.

"An Introduction to Blood Group Serology: Theory, Techniques, Practical Applications, Apparatus", by Kathleen E. Boorman and Barbara E. Dodd, M.Sc. (Lond.), Ph.D. (Lond.); 1957. London: J. and A. Churchill, Limited. 8¾" × 5½", pp. 328, with 30 illustrations. Price: 40s. (English).

Intended as a reference book for all engaged in routine blood group serology.

"The Premature Baby", by V. Mary Crosse, O.B.E., M.D. (Lond.), D.P.H., M.M.S.A., D.(Obstet.)R.C.O.G.; Fourth Edition; 1957. London: J. and A. Churchill, Limited. 8" × 5¼", pp. 254, with 39 illustrations. Price: 20s. (English).

Completely revised since publication of the previous edition in 1952.

"Practical Refraction", by Bernard C. Gettes, M.D.; 1957. New York: Grune and Stratton. 9" × 6", pp. 176, with 58 illustrations. Price: $6.50.

Directed largely to the beginner with little or no previous experience in the subject.

"The Surgical Clinics of North America, June, 1957: Lahey Clinic Number: Complications of Surgery"; 1957. Philadelphia and London: W. B. Saunders Company. Melbourne: W. Ramsay (Surgical), Limited. 9" × 6", pp. 333, with 261 illustrations. Price: Cloth binding, £8 2s. 6d. *per annum*; paper binding, £6 15s. *per annum*.

Contains 33 articles by members of the Lahey Clinic, being a symposium on complications of surgery.

"Bedside Diagnosis", by Charles Seward, M.D., F.R.C.P. (Edin.), with a foreword by Lord Cohen of Birkenhead, M.D., D.Sc., LL.D., F.R.C.P., F.A.C.P., F.F.R.; Fourth Edition; 1957. Edinburgh and London: E. and S. Livingstone, Limited. 7¼" × 4¼", pp. 456, with several illustrations. Price: 21s. (English).

The title is self-explanatory.

"Whillis's Elementary Anatomy and Physiology", by Roger Warwick, B.Sc., Ph.D., M.D.; Fourth Edition; 1957. 9¼" × 6½", pp. 288, with 107 illustrations. Price: 22s. 6d. (English).

The author of the present edition is Professor of Anatomy in Guy's Hospital Medical School, University of London.

"Some Food Problems in the Pacific Islands", by H. S. McKee, D.Phil. (Oxon.); South Pacific Commission Technical Paper No. 106; 1957. Noumea: South Pacific Commission. 10" × 8", pp. 52. Price: 2s. (sterling).

The result of a two-year study by a food technologist.

The Medical Journal of Australia

SATURDAY, SEPTEMBER 28, 1957.

MORE ABOUT CHRONIC BRONCHITIS.

In recent years British workers have been responsible for highly significant advances in our knowledge of chronic bronchitis, a disease which is becoming an increasingly common cause of mortality and morbidity with increasing industrialization and with an increasing proportion of the population in older age groups. These advances are reflected in better control of infection by appropriate antibiotic therapy for short or long periods and of respiratory failure during acute exacerbations in patients with associated emphysema. Most aspects of bronchitis are effectively and briefly covered by the contributions to a symposium[1] arranged by the National Association for the Prevention of Tuberculosis and Diseases of the Chest and Heart (the additions to the title of this well-known organization are indeed a sign of the times). The morbid anatomy and bacteriology are succinctly described by Lynne Reid and Robert May respectively; both have made fundamental contributions in their fields. P. J. Lawther's brief review of the relation of symptoms to air pollution concludes with the pertinent observation that these studies would be rendered of academic and historical importance if air pollution were abolished, and "to that end we must strive". Similar sentiments were expressed, in more colourful and forceful language, by John Evelyn in his "Fumifugium, or the Inconvenience of the Aer and Smoake of London Dissipated", first published in 1661 by Royal Command. Pollutants are, he observed, "so universally mixed with otherwise wholsome and excellent *Aer*, that her [London's] *Inhabitants* breathe nothing but an impure and thick Mist, accompanied with a fuliginous and filthy vapour, which renders them obnoxious to a thousand inconveniences, corrupting the *Lungs* . . . so that *Catharrs*, *Phthisicks*, *Coughs* and *Consumptions*, rage more in this one City, than in the whole Earth besides". In urging Parliament to consult "for the speedy removal of this universal grievance", Evelyn said that the project was of "far greater concernment . . . than the . . . beautifying of an *Aqueduct*, for which some have recieved [*sic*] such publick honours . . . and will (if ever any thing did) deserve the like acknowledgements both of the present and future Ages". A shrewd blow perhaps, but Evelyn's tract was republished in 1772 by an editor "encouraged by a more promising appearance of success", no doubt the same motive which led to the National Smoke Abatement Society's reprint of 1933. Three hundred years is a long time, too long to justify legislative tardiness on the grounds that statistical confirmation of Evelyn's contentions has been forthcoming only in recent years. This digression has been introduced in the hope that it may encourage us in this country to look three centuries ahead constructively rather than three centuries back regretfully.

Reverting to the symposium, we find an excellent summary of the problems of diagnosis by C. M. Fletcher. In this regard, lady doctors may be warned that male patients appear to dislike admitting to ladies that they cough up phlegm. Joseph Smart outlines a sound commonsense approach to management. In addition to antibiotic therapy (which was discussed in these columns some months ago) he emphasizes the importance, first, of teaching patients with some disability to take things slowly and, second, of adequate bronchodilator therapy. He is not blind to the fact that wheezing patients will use hand inhalers, whatever their doctor advises, and in any case the alleged dangers of this form of therapy are probably less important in the middle-aged bronchitic than they are in the young patient with asthma. Smart advises a three or four day course of orally administered ephedrine alternating with a course of choline theophyllinate of similar duration. This regimen is in accord with the conclusions reached by K. M. Hume and B. Gandevia[1] and by Gandevia, Hume and F. J. Prime,[2] who assessed, in controlled trials employing clinical and physiological methods of assessment, the relative merits of several "bronchodilator" preparations in common use in outpatient practice. J. R. Belcher discusses the significance of chronic bronchitis in relation to the selection of patients for operation either for bronchial carcinoma or for bronchiectasis. Its presence in association with either condition suggests that the surgeon's approach should be conservative. Other chapters relate to social, geriatric and radiological aspects of bronchitis. The NAPT booklet may certainly be recommended as an up-to-date survey of a wide field. Its value is seriously lessened by the failure of all but one of the contributors to provide any references to the original work or to more detailed expositions, an omission which can be most happily attributed to an inappropriate modesty on the part of the speakers. Those who wish to read further, especially on the epidemiological and bacteriological aspects, may be referred to the excellent symposium presented at the Royal Society of Medicine last year; the speakers included D. D. Reid, Lynne Reid, Professor J. Mulder (Holland) and C. H. Stuart-Harris.[3]

A detailed account of a comprehensive epidemiological survey in Newcastle-upon-Tyne has recently been published by A. G. Ogilvie and D. J. Newell.[4] The study is primarily academic, but many of the findings are of great

[1] "Chronic Bronchitis—An NAPT Symposium", Report of a Meeting held in London, 12th December, 1956; 1957. London, Edinburgh and Belfast: National Association for the Prevention of Tuberculosis and Diseases of the Chest and Heart. 7¾" × 5¼", pp. 44, with 8 illustrations.

[1] *Tubercle*, 1957, 38: 199 (June).

[2] *Lancet*, 1957, 1: 956 (May 11).

[3] *Proc. Roy. Soc. Med.*, 1956, 49: 767 (October).

[4] "Chronic Bronchitis in Newcastle-upon-Tyne", by A. G. Ogilvie, M.D. (Dunelm), F.R.C.P. (Lond.), and D. J. Newell, M.A. (Cantab.); 1957. Edinburgh and London: E. and S. Livingstone, Limited. 8¾" × 5½", pp. 127, with tables and illustrations. Price: 15s.

practical significance and of considerable interest to the clinician. The book, although short, is not the easiest of reading—this could not be expected—but it will remain a standard work of reference for many years. Almost all the notes which follow require some amplification or qualification, which will be found if the full text is consulted. Virtually no criticism of the methods and of the treatment of results can be raised which the authors themselves have not considered, an observation the full significance of which will be appreciated only by those who have had to undertake epidemiological surveys of this kind.

Nearly four thousand persons were approached in the course of the study, and over twelve hundred were examined with a relapse rate of about 4%; there were nearly five hundred bronchitic subjects and a similar number of "matched" normal controls. Among the findings of interest were, in the bronchitis patients, a greater frequency of annual acute respiratory episodes and of childhood attacks of lower respiratory tract infections, and a greater frequency of a family history of bronchitis and of a personal history of allergic manifestations, particularly asthma. There was little evidence of an association between housing conditions or overcrowding and bronchitis, but sooty, damp or foggy localities were related to the prevalence of the disease. As the survey was confined to the Newcastle area, this comparison was necessarily one between bad localities and very bad ones; had a "good" area been available, the influence of air pollution would probably have been more strikingly demonstrated. It is of interest that Reid (in the Royal Society of Medicine symposium) showed a higher bronchitis invaliding rate in post office workers in north-east London than in the south-west, a difference probably attributable to the greater air pollution in the former area due to the prevailing west-south-west wind.

Several of the conclusions reached by Ogilvie and Newell have an important bearing upon the vexed question of compensation of workers who attribute some respiratory disability to their work, although the authors do not discuss their results specifically from this point of view. They consider that the comparatively high prevalence of bronchitis in social class V (the lowest of the Registrar-General's categories) reflects an association between bronchitis and economic factors rather than between bronchitis and any specific occupations; the presence of an association between unemployment and bronchitis, irrespective of social class, supports this contention. There was, however, very suggestive evidence that working conditions, notably exposure to radical temperature changes, draughts and dust, were associated with bronchitis, and might well be deemed at least aggravating factors. Presumably Ogilvie and Newell would use these findings to explain Reid's observation that postmen suffer more from bronchitis than postal clerks at similar rates of pay. Now, as this study and others have shown, smoking occupies a very similar position, and giving up smoking was a feature of all the histories which recorded some relief from symptoms. By analogy, and indeed from clinical experience, escape from unsatisfactory working conditions may be expected to lead to some improvement. The logical implications of these observations are fascinating. Should a man working in these conditions, with respiratory disability due to bronchitis rather than to one of the recognized occupational pneumonokonioses, be compensated to the extent that he suffers financial loss by changing his job and to the extent justified by the residual disability after changing his job and giving up smoking? Should he receive compensation without regard to these modifying influences, or without regard to the probability that infections are an important initiating factor and indeed the "major precipitants of serious disability" (Reid)? Or should he be compensated, as perhaps he sometimes is, partly for smoking?

These are quite exciting times in the history of chronic bronchitis, and perhaps it is not inappropriate to sound a note of caution. There is reasonable justification for believing that chronic bronchitis is a more florid condition, and a more economically significant disease (for example, in terms of absenteeism) in Britain than in this country. These differences are cited firstly because they may be significant enough to warrant modification of the therapeutic regimens recommended for British patients, and secondly because they may be part of more fundamental differences in epidemiology, in bacteriology and perhaps even in pathology. A closer study of the condition in Australia is desirable before the British work, admirable though it is, is regarded as wholly applicable to bronchitis in this country.

Current Comment.

HEART DISEASE AS A CAUSE OF DEATH.

IT is very frequently stated, in both the medical and the lay Press, that heart disease as a cause of death is increasing. How sound is the evidence for this statement? Isaac Starr,[1] in a special contribution to the journal *Circulation*, discusses the matter in some detail and contrasts it with the reported fall in the death rate from tuberculosis. He points out that the death rate for any particular disease in a community is determined by the statistician from the death certificates filled in by medical men and, of course, can be as accurate only as the diagnoses on the death certificates. The reported death rate is then not a fact but an inference.

In some diseases, such as tuberculosis, the diagnosis is generally straightforward and objective, and few mistakes are likely to be made by certifying physicians. As the death certificates in most communities indicate that the death rate from tuberculosis is decreasing, we may take it that the reputed fall is a genuine one. When one comes to consider reported deaths from diseases of the heart, the position is by no means so clear. An examination of the kinds of heart disease to which death is attributed shows that the type of heart disease being diagnosed more frequently is that found in patients in late middle and old age, and the deaths are mostly attributed to arteriosclerotic or coronary heart disease. In many cases this diagnosis is correct, but it is not easy to be sure, even when an autopsy is done, especially when other pathological conditions are present. The finding of arteriosclerotic disease in the coronary arteries does not necessarily mean that this was the cause of death. Many elderly people are alive with advanced coronary disease, and in many cases coronary disease has been found at autopsy in persons who never had angina or infarction and who died from some quite different cause.

[1] *Circulation*, 1957, 16:1 (July).

Starr quotes with approval a statement that "the pathologist should perform the autopsy in complete ignorance of the case history and physical findings and from his autopsy findings he should attempt to reconstruct the history and physical findings". In a large proportion of cases there is no autopsy and often no opportunity for elaborate studies during life. The identification of disease of the heart as a cause of death presents a problem different from that of any other organ in the body. When the heart stops the patient is pronounced dead, and this fact focuses attention on the heart, especially when one is not sure of the cause of death. Starr cites a particular case. An elderly patient is suffering from an electrolyte imbalance, and the attending physician, not having any means for extensive examination, notes the weakening pulse and the falling blood pressure. Surely here the doctor would write "heart disease" on the death certificate and, if the patient were elderly, "arteriosclerotic heart disease". Nothing has drawn attention to the kidney or suprarenal as the primary source of trouble. Starr considers that this sort of confusion must happen very frequently in the practice of medicine, for the doctor must write something on the death certificate.

Arteriosclerotic heart disease in middle-aged and elderly people is much in the news at the present time, and it is more than probable that a diagnosis of heart disease as a cause of death is often made not for positive reasons but for a negative reason, the inability to give another cause. The fact that the relative frequency with which death is attributed to arteriosclerotic heart disease varies greatly in different parts of a country and in different countries adds strength to this suspicion. Diagnostic fashions change with place as well as time. These suggestions have more than academic interest. Reported death rates from heart disease in different places and in different income levels of people have been used by several observers in attempts to determine the causal facts in arteriosclerotic disease, and many of the results obtained are very puzzling and capable of several interpretations. The most recent use of such figures is made by J. Yudkin.[1] He has considered a wider field of variables than others who have used similar data. Claims have been made that coronary disease is related to total fat consumption, to the use of hydrogenated fats and to deficiency of certain unsaturated fats, amongst other things. Yudkin considers that his interpretation of the facts makes it difficult to support any theory which supposes a single or major dietary cause. He suggests that relative over-consumption of food, associated with reduced physical exercise, may be one of several causes of the disease. If the original data on which assumptions are made are unsound, the conclusions by any or all of the workers in this field are possibly also unsound, and we still do not know the cause of coronary disease.

THE BLOOD PRESSURE IN A POPULATION.

IN the last fifty years many investigators have attempted to determine the highest limit for normal blood pressure and the range of normal blood pressures at different ages in groups of people of varying make-up. Most of the groups examined have been more or less rigorously selected. Various insurance companies have given figures for large numbers of people, but these have mostly been "accepted risks". That people with high blood pressures showed a higher mortality than those with low blood pressures has been noted by many people, but there is no consensus of opinion as to what is the lowest limit of a high blood pressure. It has been believed by many that with increasing age the higher limit of normality increases, but recent work has made this doubtful. J. Bøe, S. Humerfelt and F. Wedervang have recently concluded a very extensive survey of published work and a study of a large proportion of the whole population of the City of Bergen in Norway.[1] Of the 88,339 persons over the age of fourteen years in Bergen, 67,976 were examined with regard to blood pressure; 40,258 were males and 27,718 females. Advantage was taken of the fact that all these persons had to present themselves for X-ray examination for tuberculosis. The blood pressures were determined by methods recognized as standard in U.S.A. and Britain. All other data, such as age, height and weight, condition of health and so on, were collected at the same time. Examination of the results shows that the distribution of systolic pressures is skew, and that the mean pressure increases with age, this being more marked in females than in males. The range of observed systolic pressures increases with age in such a way that the lower limit moves only slightly upwards while the upper limit clearly increases with age. Mean diastolic pressures also increase with age in a fairly regular manner.

The results have been subjected to extensive statistical examination, from which some interesting conclusions can be drawn. On the basis of the distribution curves it seems reasonable to suppose that there will be more persons with abnormal blood pressure with increasing age. While it is clear that blood pressure increases with age, it is not clear whether or not this is due to an increasing number of abnormal or pathological blood pressures tending to increase the mean systolic blood pressure. Much the same can be said about the diastolic pressure, but it is interesting that this increases almost linearly with age except in the highest age groups where there is some levelling out. From the distribution curves it is not possible to determine where "normal" blood pressure, either systolic or diastolic, according to age, passes into pathological blood pressure.

It appears that age is by far the most important factor in determining blood pressure. Height and weight explain only a minor part of the total variation of blood pressure; height alone, in particular, has a negligible effect. For constant weight blood pressure falls with increasing height, so that there is some relation between the two which is of primary importance to the blood pressure. The most interesting point of this part of the analysis is how small an influence overweight seems to have on blood pressure in spite of the widely held view to the contrary.

A great deal of other information is available in this monograph in regard to blood pressure. A large proportion of its 336 pages will probably be regarded as of mainly academic interest, but it can be recommended to anyone who wishes to go more deeply into the subject.

THE DIAGNOSIS OF BRONCHOGENIC CARCINOMA.

AN interesting aspect of the diagnosis of bronchogenic cancer is raised by Doris Rome and K. B. Olsen,[2] who discuss the relative value for examination of sputum specimens and bronchial aspirates. Sputum was obtained by expectoration into a jar containing 70% alcohol. Bronchial aspirates were placed directly into 95% alcohol. Of 266 cases of lung cancer, the diagnosis was established in 254 by histological examination. It was found possible, according to Rome and Olsen, to establish a diagnosis more accurately by examining sputum specimens than by the use of bronchial aspirates. They strongly urge that sputum examinations be made in the diagnosis of bronchogenic carcinoma, especially as bronchial aspirates are appreciably more difficult to obtain.

[1] *Lancet*, 1957, 2:155 (July 27).

[1] "The Blood Pressure in a Population: Blood Pressure Readings and Height and Weight Determinations in the Adult Population of the City of Bergen", by Johs Bøe, M.D., Sigurd Humerfelt, M.D., and Frøystein Wedervang, Cand Oecon; 1957. Bergen: A. S. John Griegs Boktrykkeri: *Acta Medica Scandinavica* Supplement 321, accompanies Volume 157. 9½" × 7", pp. 336, with 32 illustrations. Price: 45 Sw. crowns or U.S. $8.75.

[2] *J.A.M.A.*, May 11, 1957.

Abstracts from Medical Literature.

THERAPEUTICS.

Effect of Succinylcholine on the Eye.

J. DILLON *et alii* (*Anesthesiology*, January, 1957) used both cat and human extraocular muscles to determine the effect of succinylcholine on these muscles. In-vitro experiments showed that in both cat and human succinylcholine, and to a lesser extent decamethomium, produced a contraction of the extraocular muscles, which tended to pull the eye away from a severed muscle during operations for strabismus. This effect was abolished when a small dose of d-tubocurarine chloride was first administered. Succinylcholine also caused a rise in intraocular tension, secondary to its effect on the extraocular muscles and related to the rate of drainage of the aqueous. The authors recommend that it should not be used for intraocular surgery or in glaucoma.

Paralysis Agitans.

L. J. DOSHAY AND K. CONSTABLE (*J.A.M.A.*, April 13, 1957) discuss the treatment of *paralysis agitans* with orphenadrine hydrochloride ("Disipal"). In 176 cases of *paralysis agitans*, 50 milligrammes of orphenadrine were given three times a day. Weakness, tiredness and mental depression are said by the authors to be frequent and disturbing symptoms of *paralysis agitans*. They consider that benefit accrued in 98 of these patients; spitting, sweating, rigidity and tremor, weakness, fatigue and depression were relieved. This drug is said to enhance, or not to reduce, the good effects of "Artane" and the like. Side effects are few.

Ulcerative Colitis.

S. M. FIERST *et alii* (*J.A.M.A.*, April 20, 1957) discuss corticosteroid therapy in chronic ulcerative colitis. ACTH was given intravenously in doses of 20 to 80 units in 1000 cubic centimetres of dextrose (5%) in water, over eight to 12 hours, or intramuscularly, as a suspension or repository injection (corticotropin gel), in doses of 75 to 100 units in 24 hours. Of 28 patients, 22 improved. Cortisone was given in 22 cases, 300 milligrammes on the first day, 200 milligrammes on the second day, and 50 to 100 milligrammes daily thereafter for one to four months. The results were not so good with cortisone; colectomy was necessary in two cases. Hydrocortisone was used in 36 cases, 100 milligrammes being given intravenously and 150 to 200 milligrammes daily for two days, then 40 to 80 milligrammes daily for two to eight months. The effects were better than with cortisone. Three patients responded to ACTH after hydrocortisone had failed. Relapses occurred in 13 of 25 patients, but they responded to a further course of treatment. Prednisone was used in 18 cases, five milligrammes being given every four hours for two days, then five milligrammes every six hours. Treatment was continued for six to 10 weeks. The best results were obtained in patients with the least organic changes in the colon. Generally, the effects were less beneficial than with ACTH and hydrocortisone. Prednisolone was used in 10 cases, in doses of three milligrammes every six hours, for two days, then 2·5 milligrammes every six hours for six to eight weeks. Half of the patients improved, but the results were poor compared with those obtained by the use of other steroids. Of 23 ambulatory patients, treated over 10 months, four showed good remission, the best result being obtained with hydrocortisone. Corticotropin zinc hydroxide has been effective in some recalcitrant subjects. Complications have been most frequent with cortisone; three patients developed perforation of the colon with cortisone treatment and one each with ACTH and hydrocortisone treatment. With prednisone, hæmorrhage occurred from a duodenal ulcer or from the colon in three cases. Other patients receiving ACTH or cortisone developed hæmorrhage. The general impression was that steroids relieved but did not cure ulcerative colitis.

Prognosis after Severe Hypoxia in Man.

J. W. BELLVILLE AND W. S. HOWLAND (*Anesthesiology*, May, 1957) report four cases of severe hypoxia during surgery. Slowing of the frequency of the electroencephalogram is the most characteristic change associated with hypoxia. An initial increase in frequency and amplitude has been reported with the onset of sudden and complete hypoxia. This initial fast activity may or may not be associated with generalized convulsions or with gasping respirations. In man this phase of an increase in amplitude and in frequency, if present, lasts for only one or two seconds, although in animals it has been reported to last up to 10 seconds. After 10 seconds of complete cessation of circulation, slow cortical activity of one to three cycles per second is well established, and as the ischæmia of the brain becomes more prolonged, the dominant frequency becomes slower, with an increase in amplitude. After the electroencephalogram slows to a dominant frequency of one cycle per second, the pattern commences to flatten, so that by 18 to 20 seconds after complete cessation of circulation the electroencephalographic tracing becomes a straight line. These changes depend to some extent on the state of the electroencephalogram prior to the hypoxia and also on the anæsthetic agent being used. Patients who have abundant fast activity and who are in a light plane of anæsthesia will show hypoxic changes more rapidly, as the high-frequency waves are more susceptible. If hypoxia is corrected in a few minutes, recovery of the electroencephalographic tracing to the maintenance pattern will occur in the reverse order, slow activity appearing first and then faster activity until the maintenance pattern is reestablished. After prolonged hypoxia a "file pattern" has been described, which consists of a flat line with superimposed minute fast (50-cycle) spiky activity. This pattern generally carries a grave prognosis. Recovery without evidence of residual abnormalities is possible from almost any type or degree of electroencephalographic disorder. However, if the electroencephalographic tracing has remained flat for over four hours, there is a strong presumption that this cortical damage may not be completely reversible. Even though the tracing becomes flat, if the hypoxia is corrected within 60 seconds, the prehypoxic pattern returns promptly. The electroencephalogram is most sensitive to changes in oxygen tension, although carbon dioxide, pH and glucose levels also contribute. A decrease in oxygen tension causes a decrease in frequency and an increase in amplitude of the electroencephalogram. Gross hypoglycæmia causes a slowing of the electroencephalogram. A lowered carbon dioxide level slows the dominant frequency of the electroencephalogram with an increase in amplitude. An increased carbon dioxide level causes an increase in the dominant frequency and a decrease in amplitude. When the carbon dioxide level is increased to depressant levels, cortical depression has been observed. To assist in prognosis after severe hypoxia, the following three factors should be determined: (i) Did the electroencephalographic tracing become flat? (ii) How long did this lack of activity persist? (iii) What was the time interval between the correction of hypoxia and the reappearance of fast activity? The authors consider that in general the prognosis is good if the tracing does not become flat after hypoxia, or if it becomes flat, the prognosis may be good if the fast activity is restored within one hour. The appearance of a "file pattern" carries a grave prognosis, although one case has been reported in which the patient survived without neurological sequelæ.

PATHOLOGY.

Acquired Toxoplasmosis.

A. D. HARPER (*Arch. Path.*, July, 1957) describes the case of a man, aged 43 years, who died from toxoplasmosis and cirrhosis of the liver. Chronic inflammatory lesions due to the presence of the protozoan were present in many organs at autopsy, and free forms of *Toxoplasma gondii* were found in body fluid smears. The author points out that fatal toxoplasmosis often accompanies severe liver disease. In a review of 21 published cases of acquired toxoplasmosis in older children and in adults, she found that the organs most frequently infected are the heart, brain, lymph nodes, lungs, skin and skeletal muscle, more or less in that order. She discusses the diagnostic value of the complement fixation test and of the dye test.

Hepatitis after Blood Transfusion.

R. KATZ, H. DUSCI, H. BENNETT AND J. RODRIGUEZ (*Am. J. Clin. Path.*, April, 1957) observed, for periods of five to 12 months, 144 patients who had received transfusions of whole blood. Six patients (4·16%) developed hepatitis. No cases of anicteric hepatitis were recognized. Three of those who developed hepatitis had received only one trans-

fusion, while the remaining three had received more than one. Tests of liver function were performed upon the donors, but no correlation was found with the development of hepatitis in the recipients.

Immunohistochemical Study of Lesions in Rheumatic Fever, Systemic Lupus Erythematosus and Rheumatoid Arthritis.

J. J. VAZQUER AND F. J. DIXON (*Lab. Invest.*, May-June, 1957) studied the hearts of patients with active rheumatic carditis, subcutaneous nodules from patients with rheumatoid arthritis, and spleen, kidneys and L.E. cells from patients with systemic *lupus erythematosus* for their gamma globulin content, by means of the "fluorescent antibody technique" of Coons *et alii*, using fluorescent anti-human gamma globulin. The lesions of rheumatic fever, systemic *lupus erythematosus* and, to a lesser degree, rheumatoid arthritis, showed significant specific concentrations of gamma globulin. Likewise, the inclusions within L.E. cells as well as the "free bodies" in the peripheral blood of patients with systemic *lupus erythematosus* showed concentrations of gamma globulin. It is concluded that the localization of gamma globulin in the lesions of the above-mentioned diseases is a specific, preferential process, the nature of which remains to be determined. These observations are consistent with, but not specific for, the presence of an antigen-antibody reaction in the tissue lesions.

Comparison of Bone Marrow Films and Sections.

H. AGRESS (*Am. J. Clin. Path.*, March, 1957) describes a simple technique by which histological sections of aspirated bone marrow can be made in addition to the routine films. Although the films are preferable for cytological detail, the small fragments obtained by needle biopsy may in histological sections demonstrate granulomatous lesions and tumours which would otherwise be missed.

Fats in Experimental Arteriosclerosis.

W. THOMAS, N. KONIKOV, R. M. O'NEAL AND K. T. LEE (*Arch. Path.*, June, 1957) have produced sclerotic lesions in the pulmonary arteries of rabbits by means of intravenous injections of macerated blood clot. They found that oral administration of butter or oleomargarine (highly saturated fats) enhanced the incidence of lesions, whereas corn oil (a relatively unsaturated fat) had no effect upon the incidence of lesions.

Waterhouse-Friderichsen Syndrome.

J. B. THOMISON AND J. L. SHAPIRO (*Arch. Path.*, June, 1957) describe the adrenal lesions observed in 27 subjects of meningococcal septicæmia coming to autopsy. There were four examples of massive bilateral hæmorrhage with destruction of the cortices, and in 10 cases multiple small areas of hæmorrhagic necroses were present, in five instances associated with thromboses. In most of the subjects with patchy necrosis, there was also present extensive "tubular degeneration", a condition resulting from shrinkage of the cortical cells due to rapid depletion of the lipid hormone in response to body injury. Fluid exudate and cellular debris filled the tubular spaces between the cords. In the remaining four cases, only minimal tubular degeneration and depletion of the cortical lipids were found. In two cases the lesions were not of significant degree. The authors are of the opinion that patients with lesions other than massive hæmorrhage may recover completely.

Experimental Synthesis of Neutral Fat.

T. KUWABARA AND D. G. COGAN (*Arch. Path.*, May, 1957), in their second paper on experimental lipogenesis, demonstrate that the various tissues which do not ordinarily synthesize fat can do so in the presence of oleic acid or oleates. Neutral fat or other fatty acids will not do. In a previous paper they showed that serum was also a necessary factor. The serum need not be species specific. The authors consider the possibility that this mechanism may play a part in fatty degeneration and atherogenesis.

Leuchæmoid Blood in the Treatment of Radiation Disease.

L. H. SMITH AND C. C. CONGDON (*Arch. Path.*, May, 1957) have found that mice which have received a lethal dose of X-irradiation can recover if they are given an injection of white blood cells. The leucocytes were obtained from mice of the same type bearing a transplantable tumour which induces a leuchæmoid response. The survival rate depends upon the number of leucocytes injected. The data suggest that the mode of action of leuchæmoid blood is similar to that of bone marrow. Heterologous leucocytes were ineffective.

ORTHOPÆDIC SURGERY.

Constructive Hip Surgery with the Vitallium Mould.

O. E. AUFRANC (*J. Bone & Joint Surg.*, April, 1957) summarizes his impressions after 15 years' experience of the vitallium mould. He discusses 1000 conservative cases in which the operation had been performed by the late M. N. Smith-Petersen, by Carroll Larson or by himself. These patients were treated by the older type cups. The use of the more recent "true-arc" moulds of slightly larger size, and improved instruments and after-care have resulted in a greater range of motion, less pain and more stable hips. This statement is by the way, because the cases considered do not include these more recent alterations in technique. There is a statistical evaluation which expresses the patients' as well as the doctors' impressions. The author comments on the paucity of detail in a clinical record. He also considers the intangible factors that offset a good or bad result, and notes the great time required in some cases to reach the best state. Smith-Petersen's "revision" he now calls "supplementary surgery"; he has used this in 22·5% of cases. He stresses the importance of controlled convalescence, careful activity and prolonged limitation of weight bearing. The patients who had good results were kept on crutches, taking limited weight for up to six months. From the supplementary surgery it was seen that too much activity produced pain by "wearing through the healing". Another lesson stressed was the need to transplant muscle insertions to give the tendons direct pull for function, particularly the iliopsoas and the abductors. The author states that mould arthroplasty is a sound surgical procedure. When there is adequate stock to carry the prosthesis, good to excellent results will be more frequent if the patients are managed according to the principles of bone healing and of muscle control.

Instability of Lumbar Vertebræ as a Cause of Low Back Pain.

F. P. MORGAN AND T. KING (*J. Bone & Joint Surg.*, February, 1957) record their experience of primary instability of the lumbar part of the spine. They consider that this is the commonest cause of low back pain, and discuss the pathology, the clinical features and the results of treatment including 30 spinal fusions. Originally the special degeneration of the intervertebral disk was given much attention by Schmorl and Junghanns in 1932. Repetition of this work has demonstrated the persistence of lumbar instability with splits and clefts between the lamellæ of the fibrous ring as well as incomplete transverse and radial tears. Prolapse and nerve root pressure are still the important cause of lumbo-sacral pain and sciatica, but this instability associated with the less severe disk changes is commoner. Clinically, there is low back pain with mild neurological symptoms, but few or no signs. There is radiological evidence of instability. Other important clinical points aiding the diagnosis are that males are affected more than females, and that the patients are usually in the third or fourth decade. The onset is acute. There is a long history of chronic pain interspersed with acute incidents. If more than two vertebræ are involved, the back pain is more extensive, and not so localized as in a disk prolapse. Sciatic pain is present, and is usually more diffuse than in disk prolapse. The condition is often bilateral, one side being more severely affected than the other. The pain spreads over the buttocks and the backs of the thighs, but rarely below the knees. It may radiate to the inguinal and adductor regions. It appears that it is the tear in the disk itself that produces the local pain. Coughing does not aggravate the pain. Straight leg raising gives negative findings, and the reflexes are usually normal. The authors stress the radiological technique required to demonstrate the antero-posterior movement that occurs when this disk lesion exists. This instability is differentiated from spondylolisthesis. It is noted that displacement is usually in the reverse direction and not associated with any laminal defect. Attention is also drawn to apparent displacement of one body on the other, owing to distortion and lack of clarity of the skiagram. Bracing and a spinal support are used in conservative treatment. Operation was reserved for the few intractable cases in which neurological signs were present.

Brush Up Your Medicine.

THE DIAGNOSIS OF SALPINGITIS.

THE diagnosis of salpingitis is a constantly recurring problem to all doctors, and the accurate evaluation of the symptoms and signs requires a sound knowledge of anatomy and pathology, together with clinical judgement and a correct appreciation of pelvic pain. There is probably no condition in gynæcology which offers greater pitfalls in diagnosis, and as a result of surgical procedures for its relief, thousands of women have been bereft of their natural function and heritage, with the well-known sequelæ of pelvic neurosis and frustration.

It is a good thing, therefore, to examine critically the criteria for diagnosis of the condition. Our understanding will be the better for a brief revision of pathological anatomy with particular reference to the Fallopian tube and the parametrium or extratubal, extraperitoneal tissue. The paths of infection to the tube are as follows: (i) from the blood-stream; (ii) from any intraperitoneal organ—and the appendix, because of its close proximity, is the chief; (iii) directly from without, via the vagina, cervix and uterine cavity; (iv) by lymphatic spread from the cervix to the parametrial tissues, the tube being affected by perisalpingitis rather than by endosalpingitis.

Corresponding infections as a result of these paths are: (i) tuberculous salpingitis as a blood-borne infection from some distant focus; (ii) salpingitis as part of a peritoneal or contiguous appendiceal infection entering through the tubal ostium, and often having the effect of fimbrial blockage with resultant sterility; (iii) endosalpingitis arising as a result of infection from some other part of the genital tract; the infective agents are *Neisseria gonorrhœæ*, the streptococcus, *Bacillus welchii*, and others often associated with post-abortal and puerperal sepsis; (iv) perisalpingitis as a result of infection spreading out from an infected and often traumatized cervix via the lymphatics; this is basically an extraperitoneal infection.

It is important to remember that salpingitis is mostly but one manifestation of a generalized pelvic infection, and that its more dominant role is the result of its anatomical arrangement, whereby the products of inflammation can be sealed off. The endometrium with its cyclical shedding has the physiological capacity to rid itself of infection and retain little or no evidence of previous trouble when histologically examined.

The diagnosis depends on the history, the physical findings, the results of laboratory investigations and diagnostic procedures.

History.

A painstaking history still holds a place of honour in diagnosis, despite the inroads of mechanical aids, *etc.*, and nowhere more than in pelvic disease. Pelvic infection in a large number of cases is associated, sometimes immediately, sometimes remotely, with pregnancy, both abortional and full-time, and often from a study of the history some idea can be gained as to the path of infection and its likely sequelæ. Let me illustrate this by a somewhat loose but practical application. If in a case of full-time pregnancy there is a history of intrauterine interference, such as manual removal of the placenta with possible retention of small pieces, of ragged membranes and of post-partum hæmorrhage, or if in a case of abortion there is a history of foreign body penetration of the uterine cavity, the general trend of infection will then be endometritis leading to salpingitis and even peritonitis. If, however, the history suggests some lower uterine damage, such as laceration of the cervix from a difficult or ill-conceived forceps delivery, the infection has just as much chance of spreading to the parametrium and then to the tubal wall, leaving the mucosa of the tube intact. A classical example of this is a case recorded in Professor B. T. Mayes's text-book of obstetrics, that of a woman who was under my care at the Royal Hospital for Women. The patient, as a result of induced abortion, had a grossly infected and lacerated cervix and a pelvic infection which was basically parametrial in type. However, the infection was very generalized, and all pelvic organs shared in it. Her illness was long, hazardous and almost fatal, being eventually determined by the formation of pelvic and inguinal abscesses. Her convalescence was slow and left fibrotic stigmata in the pelvis; but two years after, she married and successfully bore a child. This infection spared the tubal lining its full force because of its original extraperitoneal pathway.

Physical Signs.

This is not the place to discuss the pelvic examination; but one point may be emphasized. In the performance of a bimanual palpation of the uterus, the two fingers should separate at the cervix and rotate from the vertical to the horizontal position, so that the cervix lies between the fingers and the uterine body rests on the palmar surfaces of the distal phalanges. This gives a very accurate estimate of uterine breadth and size. Examination of the back is an often neglected part of gynæcology; yet so many women with pelvic complaints have backache that its interpretation is very important. Minor ligamentous strains, bony conditions and arthritis should all be considered and excluded before backache is attributed to a diseased pelvis, and therefore X-ray and orthopædic opinions are valuable aids.

Laboratory Investigations.

Blood culture will help in determining the presence of septicæmia. Estimation of the blood sedimentation rate will sometimes be of help, more so in acute than in chronic cases. A leucocyte count is of help, although less now than previously, owing to the early exhibition of potent antibiotic drugs. The taking of swabs of vaginal, cervical and uterine discharge, and their examination by culture, and estimation of the antibiotic sensitivity of the organisms, together with examination of the urine, will in many cases place in the hands of the clinician the appropriate and effective weapon to combat the infection.

Diagnostic Procedures.

Exploratory needling of the pouch of Douglas is a useful procedure, especially in differentiating between the sometimes difficult diagnosis of salpingitis and that of extrauterine gestation, or in seeking for the presence of pus in the pouch of Douglas. The use of a wide-bore, long needle is essential.

Culdoscopy, a modern procedure, has a limited field in the diagnosis of pelvic infection, but gives little information when compared with exploratory section.

Tubal insufflation as a procedure in the investigation of sterility can diagnose blockage of tubes which may be the result of inflammation; but it is not, in my opinion, as useful as hystero-salpingography, which will show the point of blockage and often degrees of obstruction and distension which add greatly to diagnostic data.

Acute Salpingitis.

As was previously mentioned, the clinical syndrome of acute salpingitis is part of a composite picture of acute pelvic inflammation produced by various degrees of involvement of different organs, and generally acute pelvic peritonitis is a concomitant. The salient points in diagnosis are as follows:

1. Pain is distributed over the lower part of the abdomen, its extent and the accompanying tenderness and rigidity being dependent on the amount of peritoneal involvement. The pain is severe, and is accompanied by a degree of prostration, and even by peripheral circulatory failure in severe cases.

2. Fever is invariably present, but is not generally very high. It is sometimes ushered in by a rigor.

3. There are generally nausea and vomiting, a rapid pulse rate and leucocytosis.

4. Abdominal distension is not very marked, unless there is general involvement of the peritoneum.

5. Pelvic examination may be difficult because of the extreme pain and tenderness; but the pelvis will feel hot and tender, and bimanual palpation of the uterus will show it to be somewhat fixed, and movement of it will cause severe pain. Apart from tenderness in the fornices, no masses can be felt, and it is only with the subsidence of the acute stage that the thickened and swollen tubal masses can be distinguished.

If the infection occurs in the puerperium or after an abortion, examination of the uterus will show an enlargement corresponding to its subinvolution. There may be cervical or vaginal trauma, and the picture may be complicated by the presence of parametrial infection, making accurate palpation difficult. The tubes may be outlined on one or both sides, swollen by œdema, or distended by the sealing off of the fimbrial ends, with the formation of an acute pus sac, or again by the aggregation of an extraperitoneal or intraperitoneal exudate enveloping the tube and ovary and spreading into the pouch of Douglas.

The interpretation of these masses and their relation to the uterus, which may lie in retroversion, can be very difficult, as can their distinction from pelvic hæmatocele arising from extrauterine pregnancy and rupture of *corpus luteum* cysts. The differential diagnosis must be made from the following conditions: acute pelvic cellulitis, acute appendicitis, extrauterine pregnancy, twisted ovarian cyst and acute pyelitis.

Acute pelvic cellulitis, as was previously mentioned, is essentially an extraperitoneal infection, and if it is in a pure form, it will produce less peritonism than acute salpingitis. The abdominal tenderness is much lower and spreads down to the inguinal regions, with pain on hip flexion. Pelvic examination reveals more parametrial thickening and tenderness, and the absence of the tense, resilient swelling of a distended Fallopian tube. The distinction between these two in the acute stages is somewhat academic, as often they coexist, and their treatment at first is similar.

Acute appendicitis is normally not difficult to diagnose; the pain is more localized than that of acute salpingitis, the fever is not so high, and pelvic examination reveals no uniform tenderness. If the appendix is fixed in the pelvis and the condition is complicated by rupture or general peritonitis, the diagnosis may be extremely difficult, and may be confirmed only at laparotomy.

In extrauterine pregnancy, one must look for the signs of intraperitoneal bleeding. The tenderness is more generalized, shoulder pain is present, and decreased respiratory excursion is a prominent sign. Physical examination will reveal the cervical tip sign, in which intense pain is caused by giving the cervix a quick tilt with the finger. However, one has sometimes to resort to cul-de-sac diagnostic puncture.

In acute pyelitis, generally rigor, high fever, loin pain and tenderness are present, with a paucity of pelvic signs. Microscopic examination of the urine will generally clinch the diagnosis.

Twisted ovarian cyst presents as a very tense tender mass, into which most of the tenderness, on pelvic examination, is concentrated. In addition, in acute salpingitis so definite and large a mass does not present so early in the infective story.

In all the foregoing differential diagnoses, however, it must be remembered that acute salpingitis can recur in already established tubal masses, and it is in these cases that diagnosis becomes very difficult and is sometimes possible only by exploratory operation. One is sometimes forced to determine treatment by an answer to the question: "Is this condition immediately surgical?"

Chronic Salpingitis.

First, I shall briefly discuss the diagnosis of tuberculous salpingitis, which fortunately is rare in this country. However, its occasional appearance warrants some comment in a paper such as this. Its symptomatology differs little from that of other types of chronic tubal infection; but there may be evidence to support its existence in the presence of tuberculous foci, either active or healed, in some other organ. There may also be some mild pyrexia, tachycardia and sweating, with nothing in the history to suggest previous pelvic infection. Generally, a pre-operative diagnosis cannot be made unless the process is secondary to tuberculous peritonitis with ascites. Chronic salpingitis has been for years a gynæcological scrapheap, on to which are piled all types of pelvic pain, all types of vaginal discharge, dysmenorrhœa, dyspareunia, backache and a host of symptoms often unsupported by the history or physical signs. In all cases of pelvic pain, I would rate the proportions of disease as follows: psychosomatic in type, 30%; infection of the Fallopian tubes, 20%; pain associated with endometriosis and ovarian cysts, 20%; pain associated with cervical infection, parametritis and cystitis, 20%; pain associated with fibroid tumours, 5%; pain due to appendicitis, diverticulitis and other bowel infections, 5%. A large proportion of these cases are labelled "salpingitis", and the patients suffer the indignity of surgical mutilation with no improvement, but rather with an aggravation of symptoms which lead them from doctor to doctor, always unrelieved. Critical evaluation of signs and symptoms is very important; therefore let us lay down some criteria for the diagnosis of chronic salpingitis, and discuss the differential diagnosis from some of the above-mentioned conditions.

History.

In some cases no starting point can be found for a chronic tubal infection; the symptoms develop gradually, and maybe are punctuated by acute exacerbations. However, the use of leading questions concerning previous childbirth and abortion will in many cases give a lead.

Pain.

The pain is not always severe, and often bears little relationship to the pelvic findings. It is described as a bearing-down discomfort in the lower part of the abdomen, exaggerated in the premenstrual and intramenstrual phases and often accompanied by backache. Rectal pain and sometimes spasm may be present, especially if the infection is accompanied by retroversion.

Dysmenorrhœa.

Dysmenorrhœa is generally present and can be quite severe. It is almost always of secondary type.

Discharge.

Salpingitis *per se* does not cause a discharge, unless a pyometra is present. Discharge is generally caused by cervical infection or some specific vaginal organism, such as trichomonas, monilia or other organism; and yet one sees many women who have had double salpingectomy for this symptom, the cause of which can be found visually or by bacteriological examination.

Disturbances of Menstrual Rhythm.

There is generally a tendency to a shortened menstrual cycle, and often irregularity and menorrhagia are present.

Dyspareunia.

Dyspareunia of the deep type is a common symptom, and sometimes there is a complaint of exacerbation of abdominal pain on the following day.

Sterility.

Sterility is almost always an associated symptom.

Other Indications.

There are, in addition a rather loose set of secondary symptoms — insomnia, frigidity, irritability, anorexia and general nervous exhaustion. However, some or all of these symptoms are complained of by many women who have no salpingitis. How can we distinguish between them, and those who have definite infection? A most important factor is the correct interpretation of an intangible facet of the psyche which for want of a better word I will call "pelvic personality". It is the indefinable something which enables one to group certain women in the psychosomatic class, and it is acquired only by long experience and observation.

Signs.

Examination of the abdomen generally gives little definite information. There is ill-defined lower abdominal tenderness, but seldom any palpable tumour.

Pelvic examination in typical cases will reveal a small or large irregular, tender and rather fixed mass in one or both fornices, and sometimes extending into the pouch of Douglas. The uterus may be anterior or in retroversion; it is tender, and may be enlarged and fixed, and movement in any direction causes pain.

The question arises whether salpingitis can be diagnosed in the absence of palpable masses in the fornices. I believe that generally there should be some mass, or at least a thickening of the Fallopian tube or some foreshortening of the fornices, to make the diagnosis certain; but there are some cases in which fixity of the uterus alone is the only positive finding. The following conditions must be considered in differential diagnosis: endometriosis, retroversion of the uterus (as a single entity), diverticulitis, and cervicitis with parametritis.

Endometriosis.—Both in symptomatology and physical signs, endometritis can accurately mimic salpingitis, and make pre-operative diagnosis very difficult. It generally produces more profuse bleeding and occurs in women of late marriage. The masses are nodular and very firm, and often the utero-sacral ligaments are indurated.

Retroversion of the Uterus.—The only real symptom which retroversion of the uterus causes is deep dyspareunia, which can be easily reproduced on examination by a thrusting action of the fingers on the uterus. There is no accompanying salpingitis in an uncomplicated retroversion.

Diverticulitis.—Beware the left-sided mass, thick, tender and spreading out to the pelvic wall, if it is accompanied by bowel symptoms of constipation and rectal spasm. I

have seen four such cases in which, by the timely aid of a barium enema and X-ray examination, the correct diagnosis has been established.

Cervicitis and Parametritis.—Cervicitis with parametritis produces the same symptom complex as salpingitis, but the physical findings are distinctly different. To the eye the cervix presents its laceration, discharge and both ecto-cervical and endocervical erosion, with or without Nathobian follicles. Bimanual palpation reveals no adnexal masses, and a uterus which is not fixed, but is tender to stretching of the parametrial tissues. I consider this sign to be of exceptional value if it is associated with cervical infection, and it indicates an infection of the parametrium, spreading directly and lymph-borne from the cervix. It is important to distinguish this condition from or to recognize its coexistence with salpingitis, as its treatment with conization diathermy, the application of "Triple Sulphonamide" cream, and the exhibition of drugs to which the organisms found in the cervical catarrhal fluid have been found to be sensitive, gives results which are the most satisfactory to be achieved in conservative gynæcology. The finding of a healed cervix, a completely non-tender parametrium, loss of backache and a general advance in pelvic health is a very valuable reward for an outlay of two days in hospital, an intravenous anæsthetic and a minimum of post-operative debility. Truly has the cervix been called the "pelvic tonsil", and attention to its infective role will do much to lessen major pelvic surgery on innocent Fallopian tubes.

Conclusion.

The future economic and social welfare of this young country depends to no small extent on good gynæcological treatment, which is founded on sound diagnosis. This demands conservatism consistent with pelvic health, a principle which I trust these remarks will help to foster.

Sydney K. S. RICHARDSON.

Special Article.

THE BRITISH ROYAL COMMISSION ON THE LAW RELATING TO MENTAL ILLNESS AND MENTAL DEFICIENCY, 1954-1957.

A VISITOR to England in the summer of 1957 could observe the reception by the public and the Press of the report of the Royal Commission which was appointed three years previously to examine the law relating to mental illness and mental deficiency (Royal Commission, 1957). Despite the natural interest, there seems so far to have been surprisingly little controversy over the sweeping innovations in social medicine which it introduced. If they duly become law, it would appear that England will reach a level of official responsibility for, and care of, her mentally abnormal population which has never been attained by any other large nation.

A citizen of another country has mixed feelings as he watches the fate of the propositions of this Royal Commission: feelings of envy, naturally, of its progressive and imaginative authorship; of perplexity, as to whether the English experiment would be translatable into the social currency of his own country; and—it seems ungracious to mention it, but the word "currency" inevitably suggested it—of consolation that his country is not yet required to meet the operating costs of a similar scheme.

Legislating for Psychopaths.

A most striking recommendation of the Commission concerns the group known as psychopaths. The Commission uses this term in a wider sense than usual, to include not only persons with the character and behaviour disorders usually described as psychopathic, but also those feeble-minded individuals who, while not severely subnormal, need care (paragraph 17, Section C). For this large group of psychopaths, the Commission recommends the provision in the law of compulsory power to enforce treatment. The Commission thinks it justifiable to require psychopathic patients to enter hospital at any age, for a short period, at the end of which they must be discharged if they are not willing to remain for further treatment or training (paragraph 31). This requirement is irrespective of whether the psychopathic individual in question has broken the law. The recommendation is that psychopathic patients (as well as mentally ill and severely subnormal patients) should be liable to compulsory admission to hospital for medical observation at any age, provided that they are not compulsorily detained for longer than 28 days (paragraph 32).

For psychopathic patients under the age of 21 years at the time of admission, compulsory admission to hospital or guardianship, for a longer period of hospital or community care, should be allowed, if this is necessary for the patient's own welfare or for the protection of others (paragraph 367). The compulsory powers should lapse when the patient reaches the age of 25 years, if he has not already been discharged. The Commission suggests these wide powers to provide training and guidance for adolescent and young adult patients, compulsorily if necessary, in the hope that this will lead to many more unstable and emotionally immature patients receiving the training they need, at an age when they are most likely to benefit from it (paragraph 373). The Commission expects such training, if successful, to establish many of these young people as useful members of the community, capable of holding down a job and achieving a successful marriage.

But the Commission does not think it necessary or desirable that detailed definition of the term "psychopathic patients" should be written into the law. In its view, there should be no more difficulty in interpreting this term in practice than there has been in interpreting the phrase "of unsound mind" under the *Lunacy Acts* (paragraph 33). Every effort should be made to persuade patients and their relations to agree to care without compulsion. But if such efforts fail, doctors and others should not be hesitant to use the compulsory powers which the law provides, when this seems the only way of giving the patient treatment or training which he badly needs (paragraph 34). No one who is not medically qualified should be required to give, on his own responsibility, an opinion on the patient's state of mind or need for care, even after considering medical certificates, or to take action without medical advice (paragraph 40).

A new classification of mental patients, for the purposes of legislation and administration, is therefore introduced. The three groups under the new classification are: (*a*) the mentally ill; (*b*) the psychopathic; (*c*) the severely subnormal. The terms "mental defective" and "defective" become obsolete for legislative and administrative usage. It is assumed that the Government, under the *National Health Service Acts* (1946-1952), will assume responsibility for the cost of care of patients in each of the three groups.

The Commission naturally does not define the precise nature of the treatment to be given the psychopathic population; many possibilities are considered, and it may be noteworthy that Dr. Maxwell Jones, Director of the Social Rehabilitation Unit at Belmont Hospital, Surrey (an experimental unit for the treatment of persons with employment and other difficulties in terms of society), was asked to give evidence before it. The Commission concedes that special forms of care in the general community are not yet provided for psychopaths of normal intelligence; but obviously it believes that care of psychopaths could be generally effective, and presumably a paying proposition for the community at large, or it would not have had the courage to make its recommendations. A large mass of the possible arguments for and against the recommendations is embodied in the report, and forestalls some of the inevitable criticism.

Informal Admission of Patients to Hospital.

In other areas of mental health, the Commission recommends a curtailment of existing compulsory powers. This curtailment is supported by its optimistic judgements of the English public attitude to mental illness and certification of patients; the Commission, for example, considers that most people are coming to regard mental illness and disability in much the same way as physical illness and disability (paragraph 5). This being so, the present system of admission to mental hospital by the procedure of certification, or by voluntary application for admission, is clearly outmoded.

The Commission recommends that the law should be altered so that, whenever possible, suitable care may be provided for mentally disordered patients with no more restriction of liberty or legal formality than is applied to people who need care because of other types of illness or disability. Compulsory powers should be used in future only when they are positively necessary to override the patient's own unwillingness or the unwillingness of his relatives, for the patient's own welfare or for the protection of others (paragraph 7). When compulsion has to be used, there must be special procedures and safeguards. The Commission recommends new procedures for this purpose, which would replace the present certification procedures. It hopes that the term "certification", and the ideas associated with

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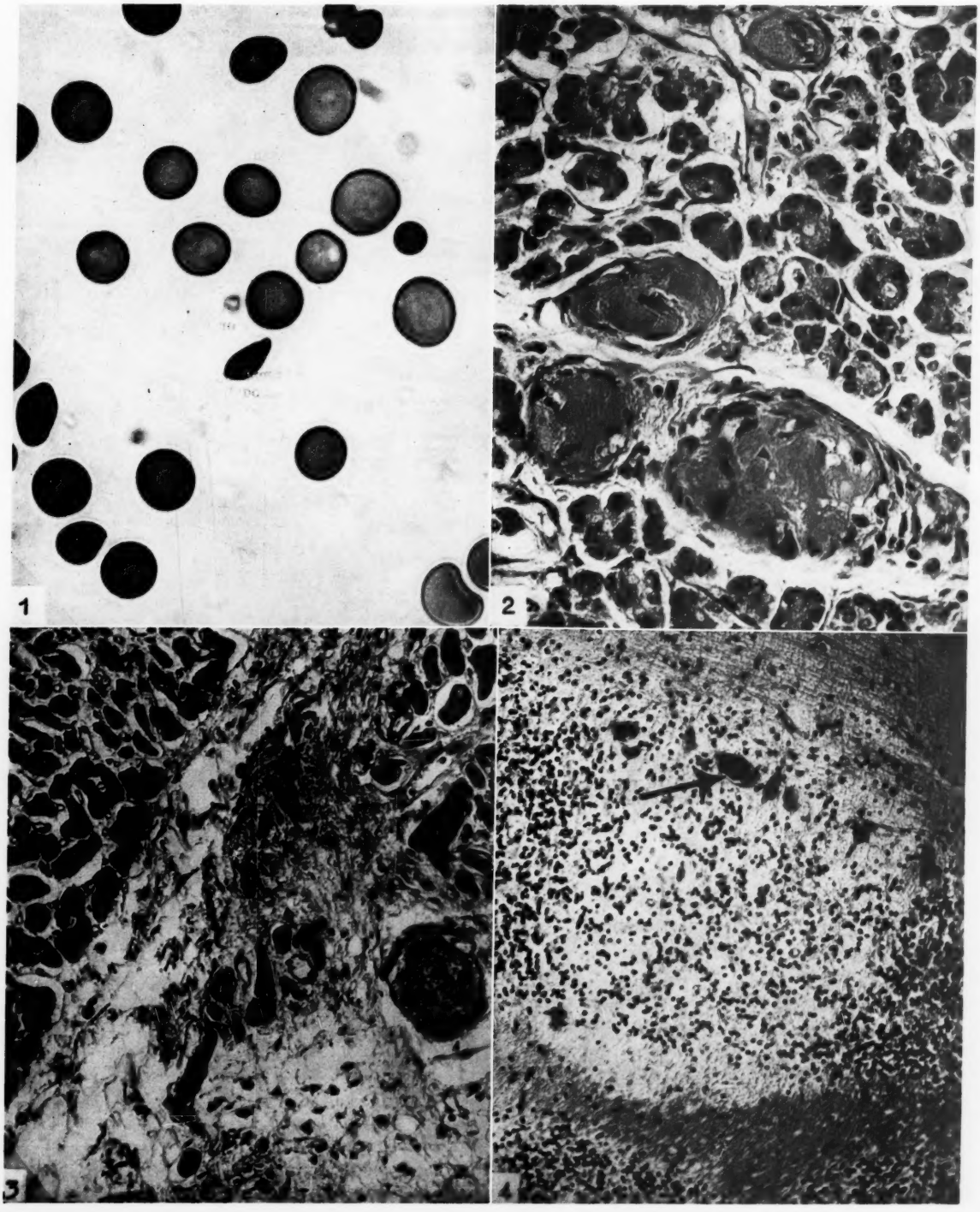

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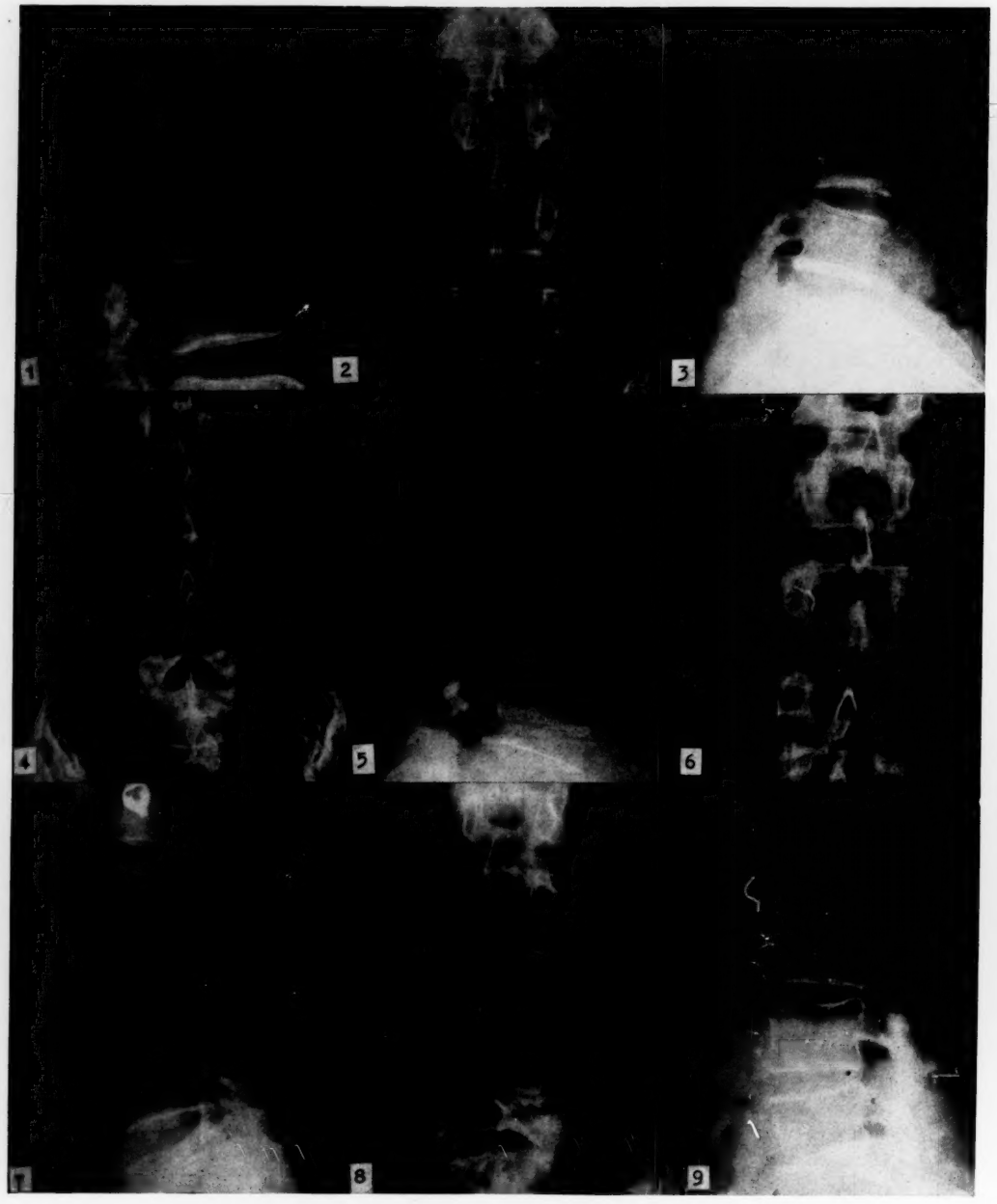

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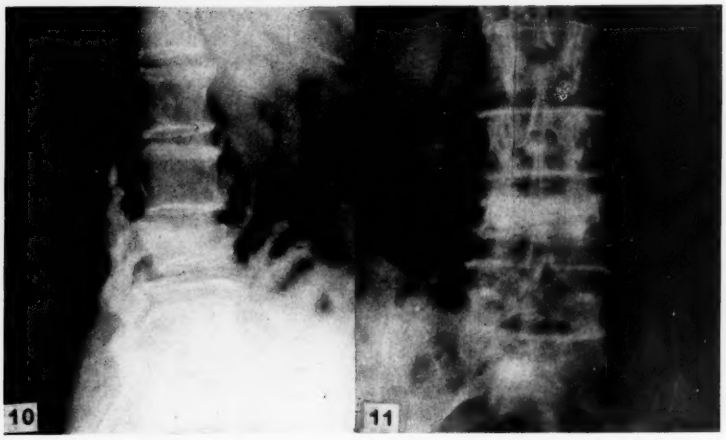

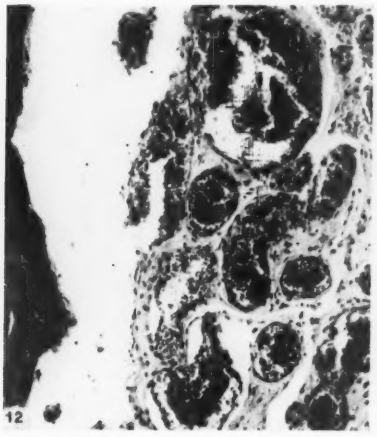

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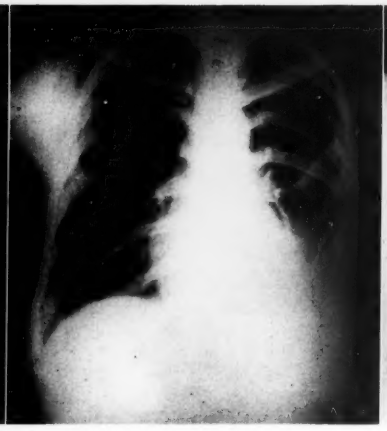

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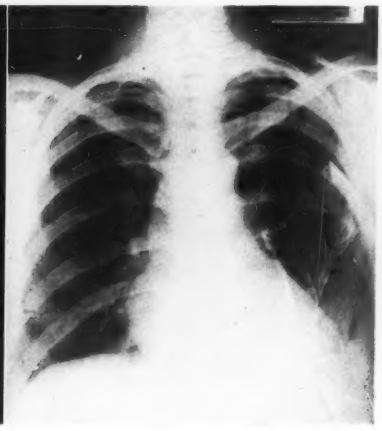

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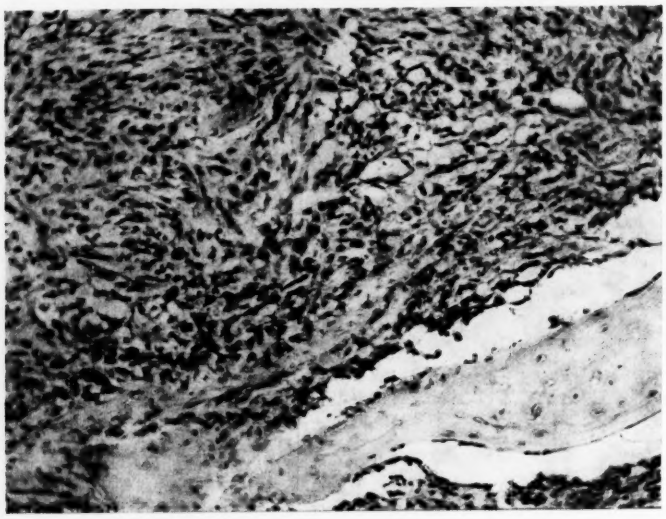
ILLUSTRATIONS TO THE ARTICLE BY NORMAN WYNDHAM.



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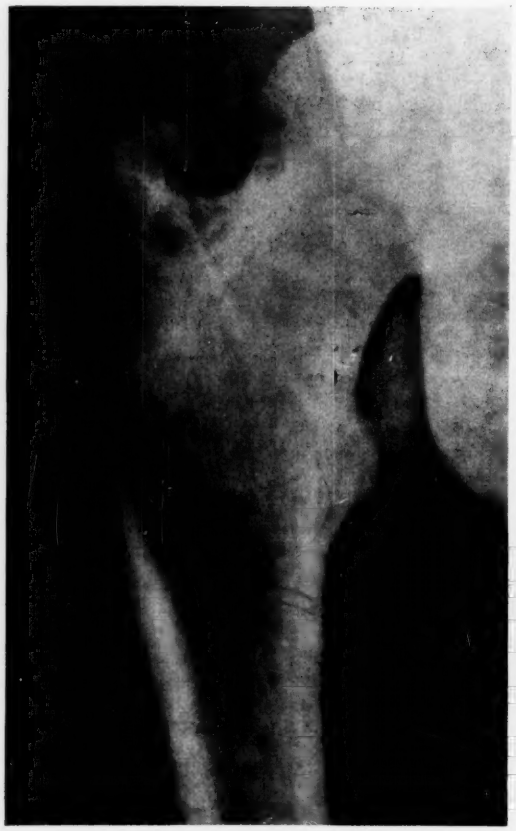

FIGURE II.

FIGURE III.

it, will fall completely into disuse, and that the public will recognize that these procedures carry no implications about the probable length or cause of the patient's illness or disability.

Concerning those mentally ill patients who cannot make a valid positive application for admission to hospital, the Commission holds that the law should no longer prevent them from entering hospital without being subject to detention (paragraph 22). These patients, like physically ill patients, should be assumed to be content to enter hospital unless they positively object. When patients are admitted without powers of detention, there should be no special formalities. They should not be obliged to sign an application for admission, or to give formal notice of intention to leave.

Acceptance of these principles (paragraph 22) should allow a considerable number of patients who now have to be certified, including many senile patients, to be admitted informally, as to any other hospital or home. The same principle should be applied to severely subnormal and psychopathic patients (paragraph 23). Most severely subnormal patients and many psychopathic patients could be admitted informally without powers of detention. The Commission finds that informal admission to designated mental hospitals cannot be introduced without amendment or repeal of the *Lunacy Act*, 1890, but sees nothing in the *Mental Deficiency Acts* to prevent informal admission to the present mental deficiency hospitals. It recommends that if no legal obstacle is found, informal admission to the latter hospitals should start at once, without a delay for new legislation on other matters. In suitable cases, the powers of detention over patients already in hospital should be brought to an end.

Commentary.

The Range of the Recommendations.

Two aspects of the report, relating to treatment of psychopaths and to informal admissions to hospital, have been selected for mention here. They are the most outstanding and therefore the most controversial aspects of the report. There is, of course, a lot more in the report, much of it not relevant to the Australian scene. A good deal of it is concerned with the unsuitability of previous legislation governing mental patients in England, and some of it relates to the special circumstances of administration under the *National Health Service Acts*, such as division of responsibility between central and local bodies. A great deal of scholarly and carefully worded presentation deals with arguments for and against the Commission's own propositions, especially those concerning psychopathy.

There can be little doubt that the Commission's familiarity with the needs of patients, if successfully translated into action, will entitle it to a place with the Tukes, Hill and Conolly in the history of reform of mental care in England. The proposals, being on a national scale, will risk expenditure which, paradoxically, neither North America nor this country, despite greater natural resources, would probably contemplate at the present time. Accordingly, both North America and Australia will have to put up with not having such motherly care—a cynic might say grandmotherly—of the mentally disordered population.

The emphasis of the Commission's report is naturally on the needs of the mentally disordered population rather than on the needs of the non-mentally disordered population. These needs are not identical, and probably nobody will ever be satisfied with the balance achieved between them.

The Social Function of Neglect of Mental Illness.

Whilst it is not suggested that the Commission has its own reasons for exaggerating the degree of public acceptance of mental illness in England, a recent Canadian experiment brings out risks inherent in making assumptions about the public attitude to mental illness and in particular about procedures intended to enlighten and educate. Cumming and Cumming (1957) conducted attitude surveys in a certain prairie town in Canada, both before and after the town had been treated to a programme presenting, somewhat intensively, enlightened ideas of mental health and care. Their survey showed much greater resistance, prejudice and hostility in the town towards mental illness, after the programme, than had existed before. It is thought possible that a population uses its prejudice and intolerance about mental illness as mental mechanisms for its own adjustment and, conceivably, may not be able to relinquish them without damage to its vigour and confidence. Neglect of mental illness therefore may have a useful social function. One might be led to suspect this possibility by discerning, historically, resistance rather than indifference to improving the lot of the mentally ill. As the sociologist Durkheim (1947) perceived, it is not entirely to punish the criminal that punitive action is taken, but rather to allow the remaining members to reassure one another that they are members of a society which is safe from deviant tendencies.

These considerations greatly complicate the lot of the mental health reformer. It will be fascinating to watch the total picture in England as the deviant individual—the mentally ill and psychopathic—is accorded a progressively safer and higher status.

Social Interaction as a Principle of Therapy.

The compulsory powers suggested by the Royal Commission in respect of psychopathic individuals will enormously stimulate the further development of treatment in hospital by means of "the therapeutic community". Already this innovation of Dr. Maxwell Jones (1953) in social rehabilitation has become the significant feature of the modern psychiatric scene in England. That this is no mere chance may be inferred from a summary of his *modus operandi*: (*a*) The traditional doctor-nurse-patient hierarchy is dissolved. The patient is elevated in status and responsibility for running the hospital. The nurse becomes a social therapist. The doctor's authority is latent rather than manifest. (*b*) The patients are not treated in the ordinary sense, but integrated into a social structure which they themselves are obliged to order. (*c*) Models of social adjustment are presented to the patients through the contacts and clashes incidental to everyday living.

Many people believe that the therapeutic community may be an even more important development in psychiatry than those which flowed from psychoanalysis. As the historian Bromberg (1954) predicts, it may well prove that the acculturation process, which is virtually a process of emotional and cultural education, will be the effective psychotherapy for neurotic, maladapted individuals in our society. The recommendations of the Royal Commission should make this novel-sounding theory and procedure commonplace in England today.

J. E. CAWTE,

Deputy Superintendent, Enfield Receiving House; Honorary Tutor in Clinical Psychiatry, University of Adelaide; Fellow of the Commonwealth Fund, New York.

Adelaide.

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Out of the Past.

In this column will be published from time to time extracts, taken from medical journals, newspapers, official and historical records, diaries and so on, dealing with events connected with the early medical history of Australia.

THE FIRST MEDICAL GRADUATES EDUCATED AT THE SYDNEY UNIVERSITY.

[From the *Australian Medical Gazette*, January, 1888.]

THE passing of the final examination for the degree of Bachelor of Medicine at the University of Sydney by the first class of students who have gone through their professional education at this medical school is an event of some importance in the history of the colony. The successful candidates, six in number, viz., Messrs. Armstrong, B.A., Bancroft, Davidson, Henry, Perkins, M.A., and Rutledge, M.A., we sincerely congratulate in their success and hope that all the bright visions which doubtless filled their minds on the announcement of the results of their examination will be fully realized.

Correspondence.

KWASHIORKOR.

SIR: I have just finished a report on nutrition of aborigines and was interested in the final paragraph under "Kwashiorkor", page 292, issue of the Journal of August 24, 1957: "Kwashiorkor has not been observed amongst Australian aboriginal children, even in the most degraded types."

The following is a report of a full-blood aboriginal child in its second year seen by me in consultation in the heart of Australia and flown south with others. It was by no means a degraded type.

M.N., inpatient from June 5 to 14, was the most severely affected of the children showing gross dehydration, œdema of legs to knees, on admission. He, like the others, was treated with a high protein, vitamin added diet and ultimately intravenous serum, but he failed to respond and despite those measures died. His tests revealed grossly lowered serum protein 4·9 grms. % while all other tests of blood, fæces and urine were normal. At p.m. the findings revealed a fatty liver, general evidence of malnutrition and infections of both mastoids.

Yours, etc.,

CHARLES DUGUID.

175 North Terrace,
Adelaide,
September 7, 1957.

PRESERVATION OF ANAL SPHINCTERS IN THE TREATMENT OF CARCINOMA OF THE RECTUM.

SIR: Mr. E. S. R. Hughes's interesting article on this subject (M. J. AUSTRALIA, August 31, 1957) calls for some comments. Firstly, dealing as it does mainly with technique, and the pernicious (or at least controversial) doctrine of limited resection for cancer, it was, in my opinion, more suitable to a surgical journal, whose readers would be better equipped to consider it critically, than to a journal for the general body of the profession, the vast majority of whose readers are not so trained.

As to the general theme, we all know that these operations as described by Mr. Hughes, or similar operations, are technically feasible. We further know that with modern aids they can be carried out with very low mortality. We also know that in most cases the functional result is satisfactory, and pleasing to the patient. However, all these are subsidiary questions—recovery from an operation is never synonymous with cure or even prolonged survival. The really important question is: do they cure as many cases of cancer of the rectum as will the standard abdominoperineal excision—one of the best conceived and most successful, as regards cure and prolonged survival, of any operation in cancer surgery. Mr. Hughes gives no answer to this vital question; but by his silence, and general recommendation tending to extend the indications for sphincter-preserving procedures, infers that the answer is, or may be, yes. This complete disregard of results, *re* prolonged survival and cure, whilst canvassing an operation so appealing, but nevertheless more than doubtful on this overwhelmingly important point, is ground for major, and I believe just, criticism of the whole article. I would add that in this controversial field only results from hospital patients compiled by independent observers are really of any value.

To provide cure or long survival, modern surgery demands an adequate resection of the bowel and the widest possible resection of the lymph field. We must, therefore, be less concerned with what are relatively minor inconveniences to the patient, and more concerned with long survival and cure; for not only is this good surgery, but also what the patient really wants and expects. If the alternatives are honestly explained to him, the patient will always demand the operation which offers him the better chance of cure; and, if properly instructed and encouraged, readily accommodates himself to the resulting inconvenience.

It will be noted that this region, where limitation appeals so strongly to the patient's immediate desires and emotions, is practically the only region in the body where limited resection for cancer is canvassed, despite the fact that at this site, wide resection has proved one of the most satisfactory procedures *re* cure and prolonged survival in the whole of cancer surgery. Surgeons must search themselves that the motives which lead them to do lesser operations for a fatal disease are not conditioned by an immediately grateful patient.

In cancer of the rectum, there are undoubtedly many instances in which an anterior resection should be done, and all of Mr. Hughes's reported cases may well be in this category; but we must always keep in the forefront of our minds that, when a patient agrees to an operation for cancer, he places on us the responsibility to eradicate, if possible, the malignant process. If we always keep this in mind, and act upon it, then limited low resections, except in very special cases, will rapidly become obsolete. We must not be led by the uninformed desires and immediate elation of our patients, and sometimes of their medical advisers, into performing operations which, though technically feasible and immediately popular, carry with them risks of recurrence which we would not accept ourselves.

One of the several necessities of surgery for bowel cancer is to excise sufficient bowel to include maximum intramural spread. As I, and I think most surgeons, would not accept division of the rectum two centimetres below the growth, if we were patients, we have no right to ask our own patients to do so.

Yours, etc.,

ANTHONY R. KELLY.

33 Collins Street,
Melbourne,
September 6, 1957.

A FATAL CASE OF PARATHION POISONING.

SIR: The attention of this committee has been drawn to an article published in the Journal of August 17, 1957, concerning a fatal case of parathion poisoning, which was contributed by Dr. L. D. Gilsenan, of Leeton. The writer of the article concluded by saying: "It is surely absurd that in these days of oppressive regulations covering all varieties of drugs *et cetera*, unskilled persons can buy and use extremely toxic chemicals such as parathion without restriction or supervision."

In this connexion, the committee wishes to point out that organic phosphonates, fluorophosphates, pyrophosphates and thiophosphates are included in the First Part of Schedule I of the "Poisons List", and that such poisons may only be purchased normally from a chemist after signing the poisons book.

However, the *Poisons Act* contains exemptions from this procedure in regard to:

(*a*) Proprietary preparations for use as a sheep or cattle dip, or for agricultural, pastoral, or horticultural purposes or as a vermicide, and
(*b*) Poisoned material or liquid for the destruction of noxious animals, birds, insects or plants.

Furthermore, the following regulations are applicable to the abovementioned exemptions:

Regulation 6A. "No person shall sell by retail any poisoned material or liquid for the destruction of noxious animals, birds, insects or plants, unless the container is clearly and distinctly labelled with:

(i) the name of the poison or poisons contained therein;
(ii) the name and address of the manufacturer or packager;
(iii) the purpose for which the poisoned material or liquid is intended and directions for its use, together with a statement that the substance should not be used for any other purpose; and
(iv) directions for first-aid attention in the case of poisoning by the poison or poisons contained therein."

Regulation 11. "No person shall sell, whether by wholesale or retail,

(*a*) any of the following poisons included in the First Part of Schedule One of the Poisons List, namely—

.....
.....
Phosphonates, organic; Organic Fluorophosphates, Organic Pyrophosphates; Organic Thiophosphates;
.....
.....

unless the container is conspicuously marked or labelled with directions for first-aid attention in the case of poisoning by the poison or poisonous substance contained therein."

Regulation 13.

(*d*) The container of a proprietary preparation shall, in addition to the above provisions, be durably labelled, marked or branded with:

(i) the name or brand of the proprietary preparation,

(ii) the name and address of the manufacturer,

(iii) statement of the poison or poisons contained therein and the proportion of each poison,

(iv) the purpose for which the proprietary preparation is intended, directions for use and a notice that the contents must not be used for any purpose other than that for which it is intended, and

(v) directions for treatment in the case of poisoning by the proprietary preparation.

The committee feels that these regulations go a long way towards providing warnings and safeguards for persons using such poisons, having in mind the fact that many poisons are now used for industrial and farming purposes, as well as in the home, and that people needing them should not be unduly hampered when they wish to purchase them for legitimate use.

Yours, etc.,

H. J. WALLACE,
Chairman, New South Wales Poisons Advisory Committee.

Department of Public Health,
52 Bridge Street,
Sydney.
September 2, 1957.

Australasian Medical Publishing Company Limited.

ANNUAL MEETING.

THE adjourned annual meeting of the Australasian Medical Publishing Company Limited was held at The Printing House, Seamer Street, Glebe, New South Wales, on September 18, 1957, DR. W. L. CALOV, the Vice-Chairman, in the chair.

Directors' Report.

The report of the directors of the company was as follows:

The directors submit their report for the twelve months ended June 30, 1957, together with the balance sheet as at June 30, 1957, and the profit and loss account for the twelve months ended June 30, 1957.

It is with regret that we report the death at Perth on December 13, 1956, of Dr. Frederick William Carter, who had been a director and member of the company from 1950. Dr. Carter did much to assist in the progress of the company, and always took a great interest in THE MEDICAL JOURNAL OF AUSTRALIA. He was the Journal's representative in Western Australia from 1940 to 1949.

The contributions to THE MEDICAL JOURNAL OF AUSTRALIA have continued to be of a high standard and the circulation of the Journal is increasing. Dr. Mervyn Archdall, who completed twenty-five years of valued service as Editor of the Journal in 1955, proceeded on six months' long-service and retirement leave on March 1, 1957. Dr. Ronald Winton, Deputy Editor, was appointed Acting Editor.

Reports are reaching us about two new monthly medical periodicals for Australia. They are to be of the "digest" type, and in competition with each other. One will be published in Sydney, and the other in Melbourne. Apparently they will be commercial ventures deriving revenue from advertisements, and will be distributed free of charge to members of the profession throughout Australia. It is stated on advertising pamphlets distributed by the periodicals to get advertisements, that a number of well-known medical men are to act on editorial boards in an honorary capacity, and others on an editorial advisory board. These periodicals will introduce new methods to medical journalism and publishing in Australia, on which opinions will vary.

A satisfactory result was obtained from the year's production of the printing and publishing department, and arrangements have been made for the payment of debenture interest for the year ended June 30, 1957. In accordance with a modifying agreement entered into with debenture holders, the rate of interest on all series of debentures has been increased to 6½% *per annum* from July 1, 1956.

The year saw the completion of The Western Extension to The Printing House, and modern machinery has been

DISEASES NOTIFIED IN EACH STATE AND TERRITORY OF AUSTRALIA FOR THE WEEK ENDED SEPTEMBER 7, 1957.[1]

Disease.	New South Wales.	Victoria.	Queensland.	South Australia.	Western Australia.	Tasmania.	Northern Territory.	Australian Capital Territory.	Australia.
Acute Rheumatism	3(1)	2(1)	5(1)	1	1	..	1	..	13
Amœbiasis	..	..	..	..	1(1)	..	..	..	1
Ancylostomiasis	..	..	..	..	..	..	..	..	..
Anthrax	..	..	..	..	..	..	..	..	..
Bilharziasis	..	..	..	..	..	..	..	..	..
Brucellosis	..	..	..	..	..	..	..	..	..
Cholera	..	..	..	..	..	..	..	..	..
Chorea (St. Vitus)	..	..	..	..	..	..	..	..	..
Dengue	..	..	..	..	..	..	..	..	..
Diarrhœa (Infantile)	4(3)	9(8)	..	..	..	..	..	2	15
Diphtheria	..	..	..	..	1(1)	..	..	..	1
Dysentery (Bacillary)	1	..	..	..	5	..	1	..	7
Encephalitis	..	..	..	..	..	..	..	..	..
Filariasis	..	..	..	..	..	..	..	..	..
Homologous Serum Jaundice	..	..	..	..	..	..	..	..	..
Hydatid	..	..	..	..	..	..	..	..	..
Infective Hepatitis	48(30)	14(11)	..	6(5)	1(1)	3(1)	1	1	74
Lead Poisoning	..	..	..	..	..	..	..	..	..
Leprosy	..	..	1	..	..	..	..	..	1
Leptospirosis	..	..	2	..	..	..	..	..	2
Malaria	..	..	..	..	..	..	..	..	..
Meningococcal Infection	..	6(6)	1	..	..	..	..	1	8
Ophthalmia	..	..	..	..	..	..	..	..	..
Ornithosis	..	..	..	..	..	..	..	..	..
Paratyphoid	..	..	..	..	..	1	..	..	1
Plague	..	..	..	..	..	..	..	..	..
Poliomyelitis	..	..	..	..	..	..	..	..	..
Puerperal Fever	..	..	1	..	..	1(1)	..	..	2
Rubella	..	35(22)	2(2)	11	11(10)	..	..	1	60
Salmonella Infection	..	..	..	..	..	..	..	..	..
Scarlet Fever	5(2)	10(7)	6(2)	3(2)	1(1)	..	..	..	25
Smallpox	..	..	..	..	..	..	..	..	..
Tetanus	..	..	..	..	..	..	..	..	..
Trachoma	..	..	..	..	2	..	..	..	2
Trichinosis	..	..	..	..	..	..	..	..	..
Tuberculosis	18(15)	20(14)	..	9(6)	10(2)	2(1)	..	2	61
Typhoid Fever	..	..	19(9)	..	..	..	..	..	19
Typhus (Flea-, Mite- and Tick-borne)	..	..	1	..	..	..	..	..	1
Typhus (Louse-borne)	..	..	..	..	..	..	..	..	..
Yellow Fever	..	..	..	..	..	..	..	..	..

[1] Figures in parentheses are those for the metropolitan area.

placed on order. We expect the new machines to be in operation early next year.

The company's reserves are used in the business, and we consider the state of the company's affairs is satisfactory.

Dr. Colin Warden Anderson and Dr. W. L. Crowther retire from office by rotation in accordance with the Articles of Association (Article 39). They are eligible and present themselves for reelection.

W. L. CALOV,
Vice-Chairman.

August 29, 1957.

Election of Directors.

Dr. C. W. Anderson and Dr. W. L. Crowther were reelected to the Board of Directors.

The Royal Australasian College of Physicians.

MEETING OF VICTORIAN FELLOWS AND MEMBERS.

THE Victorian Fellows and Members of The Royal Australasian College of Physicians will hold a scientific meeting at the Royal Melbourne Hospital on Saturday, October 5, 1957. The programme is as follows: 11.30 a.m., "The Treatment of Leuchæmia", Dr. John McLean; 12 noon, "Drug-Induced Blood Dyscrasias", Dr. T. H. Hurley; 1.30 p.m., "Hæmorrhagic Diseases in Childhood", Dr. J. Colebatch; 2 p.m., "The Use of 59 Fe in Investigation in a Variety of Hæmatological Disorders", Dr. R. Motteram; 2.30 p.m., "A Critical Assessment of Laboratory Procedures in Hæmatology", Dr. D. C. Cowling; 3.30 p.m., "Newer Diagnostic Procedures in Hæmatology", Dr. Carl de Gruchy.

All members of the medical profession are cordially invited to be present.

The College of General Practitioners.

NEW SOUTH WALES FACULTY.

THE fourth annual general meeting of the New South Wales Faculty of the College of General Practitioners is to be held in the Stawell Hall, The Royal Australasian College of Physicians, 145 Macquarie Street, Sydney, on Friday, October 4, 1957, at 8.30 p.m.

Notice.

AUSTRALIAN ASSOCIATION OF OCCUPATIONAL THERAPISTS.

THE annual meeting of the Australian Association of Occupational Therapists will be held at the Robert H. Todd Assembly Hall, British Medical Association House, 135 Macquarie Street, Sydney, on Tuesday, October 8, 1957, at 7.30 p.m. The guest speaker will be Mr. L. Short, general secretary of the Federated Ironworkers' Association of Australia. Medical practitioners interested in industrial medicine and rehabilitation of the sick and injured are invited to attend.

Corrigendum.

WE are informed that an error has occurred in the issue of the Journal of September 14, 1957. In the leading article entitled "The Process of Aging" (page 397), the name of Professor F. Verzár appears as "Veszar". We regret this mistake.

Nominations and Elections.

THE undermentioned has applied for election as a member of the New South Wales Branch of the British Medical Association:

Murray, John Leslie Moreton, M.B., B.S., 1946 (Univ. Sydney), 19 Trelawney Street, Woollahra, New South Wales.

Deaths.

THE following deaths have been announced:

SPRING.—John Patrick Spring, on September 8, 1957, at Melbourne.

CABLE.—Walter George Hughes Cable, on September 10, 1957, at Balmain, New South Wales.

Diary for the Month.

OCT. 1.—New South Wales Branch, B.M.A.: Council Quarterly.
OCT. 2.—Victorian Branch, B.M.A.: Branch Meeting.
OCT. 2.—Western Australian Branch, B.M.A.: Branch Council.
OCT. 4.—New South Wales Branch, B.M.A.: Annual (1957) Meeting of Delegates.
OCT. 4.—Queensland Branch, B.M.A.: General Meeting.
OCT. 8.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
OCT. 8.—New South Wales Branch, B.M.A.: Organization and Science Committee.

Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment mentioned below without having first communicated with the Honorary Secretary of the Branch concerned, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

New South Wales Branch (Medical Secretary, 135 Macquarie Street, Sydney): All contract practice appointments in New South Wales.

Queensland Branch (Honorary Secretary, 88 L'Estrange Terrace, Kelvin Grove, Brisbane, W.1): All applicants for Queensland State Government Insurance Office positions are advised to communicate with the Honorary Secretary of the Branch before accepting posts.

South Australian Branch (Honorary Secretary, 80 Brougham Place, North Adelaide): All contract practice appointments in South Australia.

Editorial Notices.

ALL articles submitted for publication in this Journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations and not to underline either words or phrases.

References to articles and books should be carefully checked. In a reference the following information should be given: surname of author, initials of author, year, full title of article, name of journal, volume, number of first page of the article. The abbreviations used for the titles of journals are those adopted by the Quarterly Cumulative Index Medicus. If a reference is made to an abstract of a paper, the name of the original journal, together with that of the journal in which the abstract has appeared, should be given with full date in each instance.

Authors who are not accustomed to preparing drawings or photographic prints for reproduction are invited to seek the advice of the Editor.

Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary is stated.

All communications should be addressed to the Editor, THE MEDICAL JOURNAL OF AUSTRALIA, The Printing House, Seamer Street, Glebe, New South Wales. (Telephones: MW 2651-2-3.)

Members and subscribers are requested to notify the Manager, THE MEDICAL JOURNAL OF AUSTRALIA, Seamer Street, Glebe, New South Wales, without delay, of any irregularity in the delivery of this Journal. The management cannot accept any responsibility or recognize any claim arising out of non-receipt of journals unless such notification is received within one month.

SUBSCRIPTION RATES.—Medical students and others not receiving THE MEDICAL JOURNAL OF AUSTRALIA in virtue of membership of the Branches of the British Medical Association in Australia can become subscribers to the Journal by applying to the Manager or through the usual agents and booksellers. Subscriptions can commence at the beginning of any quarter and are renewable on December 31. The rate is £5 *per annum* within Australia and the British Commonwealth of Nations, and £6 *per annum* within America and foreign countries, payable in advance.